

CALIFORNIA HIGH-SPEED TRAIN

Project Environmental Impact Report
/Environmental Impact Statement

SUPPLEMENTAL

Palmdale to Los Angeles

Alternative Analysis Report

Volume 1

March 2011



CALIFORNIA
High-Speed Rail Authority



U.S. Department of Transportation
Federal Railroad Administration



California High-Speed Train Project



Los Angeles - Palmdale

SUPPLEMENTAL ALTERNATIVES ANALYSIS REPORT

March 2011

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ABBREVIATIONS / ACRONYMS

AA	Alternatives Analysis
Amtrak.....	National Railroad Passenger Corporation
Authority	California High-Speed Rail Authority
Caltrans	California Department of Transportation
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CGS.....	California Geological Survey
CHSTP	California High Speed Train Project
CNG.....	Compressed Natural Gas
CNPS	California Native Plant Society
CRHR.....	Californian Register of Historic Places
CWA	Clean Water Act
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EMT.....	Engineering Management Team
FEMA.....	Federal Emergency Management Agency
FRA	Federal Railroad Administration
GIS.....	Geographic Information System
HOV.....	High Occupancy Vehicle
HST	High-Speed Train
LADOT	City of Los Angeles, Department of Transportation
LAP.....	Los Angeles to Palmdale
LA River	Los Angeles River
LASHP.....	Los Angeles State Historic Park
LAUS	Los Angeles Union Station
LOSSAN	Los Angeles to San Diego Passenger Rail Corridor
Metro.....	Los Angeles County Metropolitan Transportation Authority
MPH	Miles per Hour
NB.....	Northbound
NEPA	National Environmental Policy Act
NRHP.....	National Register of Historical Places
PMT.....	Program Management Team
RCP	Reinforced concrete pipe

ROW.....Right-of-Way
SBSouthbound
SCGSouthern California Gas Company
SCRRASouthern California Regional Rail Authority (Metrolink)
SRState Route
SWGStakeholder Working Group
TM.....Technical Memorandum
TOD.....Transit-Oriented Development
USGSUnited States Geological Survey
UPRRUnion Pacific Rail Road
VCPVitrified Clay Pipe

1.0 SUPPLEMENTAL ALTERNATIVES ANALYSIS REPORT

This March 2011 Palmdale to Los Angeles Supplemental Alternatives Analysis (AA) report updates the Preliminary AA Report the California High-Speed Rail Authority (Authority) issued for the Palmdale to Los Angeles high-speed train (HST) section in July 2010.

This Supplemental AA has been prepared to document additional evaluation, development and refinement of design options, recommending alternatives between LAUS and Sylmar to be further studied through the environmental process and presenting current studies between Sylmar and Palmdale. Further analysis between Sylmar and Palmdale is required before further recommendations are made.

These developments include the following:

Los Angeles Union Station (LAUS) to Metrolink Central Maintenance Facility (CMF)

- ♦ Alternative LAPT1: By increasing the gradient and adjusting the layout of the tracks approaching LAUS, bored tunnel construction can be used under Los Angeles State Historic Park (LASHP) avoiding sensitive subsurface cultural resources and temporary surface impacts to the park during construction.
- ♦ Alternative LAPT2: Alternative LAPT3 has been refined and is now compatible with the elevated LAUS along with LAPT2. LAPT2 is no longer recommended to be carried forward as it has greater impacts and slower journey times than LAPT3.
- ♦ Alternative LAPT3: By increasing the gradient and adjusting the layout of the tracks approaching LAUS, alternative LAPT3 is now compatible with the elevated LAUS option and has a bored tunnel under the Los Angeles State Historic Park.
- ♦ Alternative LAP1C: Alternative LAP1C is unchanged from the Preliminary AA and is recommended to be carried forward.

Metrolink CMF to SR 2

- ♦ Following comments from stakeholders, a variation of the tunnel alternatives was considered. The bored tunnel would be extended under Rio de Los Angeles State Park (RDLASP) and the new high school, emerging into trench north of the school and rising to pass through the SR2 bridge at-grade.
- ♦ Following further discussions with existing train operators and the California Department of Parks and Recreation (State Parks), the at-grade option on the Metrolink alignment, not carried forward in the Preliminary AA, was re-evaluated and is recommended to be carried forward in preference to the trench alignments along the Metrolink alignment or along San Fernando Road.

SR 2 to Sylmar

- ♦ The seismic risk associated with the Verdugo Fault has restricted the profile options between Burbank Bob Hope Airport and San Fernando to an at-grade alignment which would give the quickest service recovery time should a major seismic event occur.
- ♦ As requested by the Authority Board, a station located in downtown Burbank, at the location of the Burbank Metrolink station, was evaluated in more detail. A non-standard layout to bring the tracks closer to the existing right-of-way, reducing some of the impacts illustrated in the Preliminary AA report, was considered. As a result of the remaining impacts of this station location on the surrounding area and the need to reconstruct the existing bridges over the alignment, this alternative is not recommended to be carried forward for evaluation in the EIR/EIS.
- ♦ The seismic risk associated with the Verdugo Fault, the impacts on the new development south of SR 118 and the construction challenges and visual impact associated with the elevated Pacoima Wash station result in this alternative no longer being recommended to be carried forward. Extensive

adverse impacts on adjacent freeways and intersections mean that an alternative 'at-grade' Pacoima Wash option is not recommended to be carried forward.

Sylmar to Palmdale

- ♦ The SR 14 East alignment was refined to mitigate impacts on the proposed Vasquez High School development and the existing High Desert School in Acton. The SR 14 West alignment is unchanged from the Preliminary AA. Comments and suggestions received through stakeholder and community outreach continue to be evaluated.
- ♦ The seismic risk associated with the San Gabriel fault led to a further investigation of alignment options in the Santa Clarita area.

1.1 Community Outreach

Since the release of the Preliminary Alternatives Analysis (Preliminary AA) on July 8, 2010, the project team has met with elected officials and staff, key stakeholders and the public in the cities of Los Angeles, Glendale, Burbank, San Fernando, Santa Clarita, and Palmdale and the Towns of Acton and Agua Dulce, and has held community open houses in the cities of Palmdale, Burbank, Santa Clarita and downtown Los Angeles for the general public to review and comment on the alignment alternatives and station location options released in the Preliminary AA. A detailed list of these meetings is included as Appendix B

Overall concerns from these meetings include intermodal connectivity, tunneling through faults and aquifers, noise/vibration, technology, eminent domain, grade crossings, future development plans, visual blight, funding, access, and wildlife each of which will be studied in greater detail during the environmental review process.

Corridor Cities

- City of Los Angeles

The Supplemental Alternatives Analysis (Supplemental AA) alignments were presented to the Los Angeles Technical Working Group, which includes the City of Los Angeles planners, Los Angeles State Parks, the Mayor's office, and others, and no objections were voiced to the revised tunnel alignment through the Los Angeles State Historic Park and the Rio de Los Angeles Park or to the at-grade alignment along the Metrolink right-of-way through Rio de Los Angeles Park.

The San Fernando Valley Working Group is concerned with grade crossings and station locations throughout the San Fernando Valley. Additional concerns include ridership projections, parking capacity, intermodal connectivity especially with regard to Burbank Airport, and transit-oriented development opportunities adjacent to station location options, which we communicated would be studied during the environmental review process.

- City of Glendale

The city is concerned with grade crossings and possible street closures, future development plans within the city and how this project may affect those plans, and intermodal connectivity throughout the city of Los Angeles and the San Fernando Valley to station locations, which we communicated would be studied during the environmental review process.

- City of Burbank

The city prefers the downtown Burbank station location to be withdrawn from further study. They prefer the Buena Vista station location option moving forward.

- City of San Fernando

Both the city council and staff are supportive of the project and are eager to have a station located within the city.

- **City of Santa Clarita**

The city has concerns about intermodal connectivity, tunneling through faults and aquifers, noise/vibration, technology (maglev versus steel wheel), eminent domain, and because of no station, bearing the impacts of the project but not realizing any benefits for the community. During a city council study session, we communicated that these issues, except for the technology which is steel wheel on steel rail, will be studied during the environmental review process.

- **Towns of Acton and Agua Dulce**

Stakeholders including the Acton and Agua Dulce Town Councils and the Acton-Agua Dulce Unified School District have concerns regarding the alternative alignments presented in the Preliminary AA, including the impact to schools and residential properties.

- **City of Palmdale**

The city council and staff are supportive of the project and are eager to have a station located in Palmdale. The city prefers the east alignment alternative which travels to the Palmdale Transportation Center.

Key Stakeholders

- **Los Angeles State Parks**

The California State Parks' opinion is that no cut and cover tunnels which would impact the Parks should be included in the route from LAUS to SR 2. Deep tunneling is acceptable to them as long as there is no impact to the Los Angeles State Historic Park. In addition, the routes that impact Rio de Los Angeles State Park are unacceptable and they have insisted on identification of other routes. They are accepting of the at-grade alignment alternative that travels along Metrolink.

- **Natural Resources Defense Council (NRDC) and Friends of the Los Angeles River (FOLAR)**

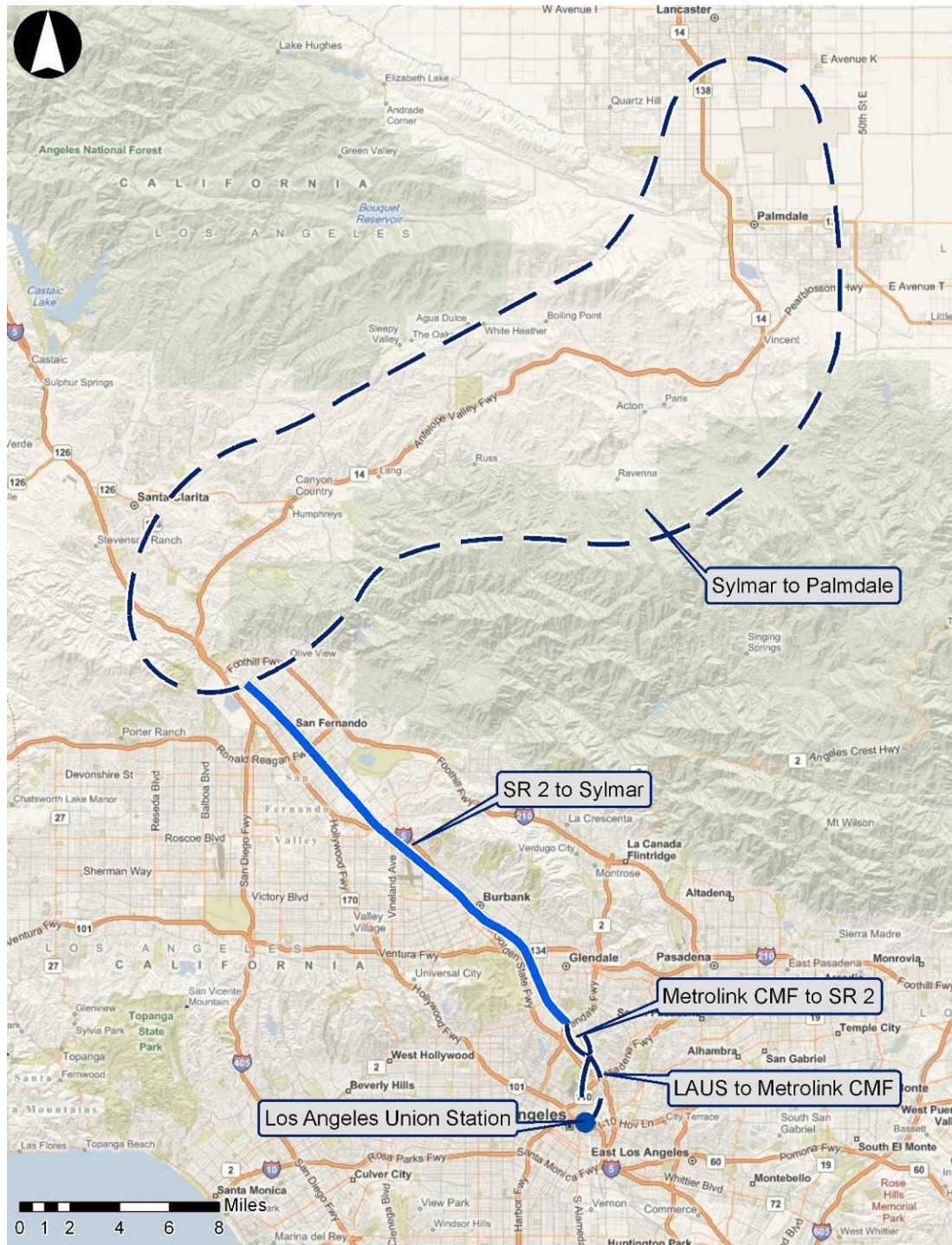
These organizations support the "long-tunnel" alignment alternative in which a bored tunnel would run underneath the Los Angeles State Historic Park, Rio de Los Angeles State Park, and the Los Angeles River and emerge near the SR 2. They believe that this alignment will avoid adverse impacts to each of these places and the surrounding communities. They strongly oppose any route that would use cut and cover construction to create tunnels either through or immediately next to the Los Angeles State Historic Park. They also are strongly opposed to any route, such as a trench along San Fernando Road, which they believe will adversely affect the Rio de Los Angeles State Park or the surrounding communities. They also do not support an at-grade or elevated route along the existing Metrolink corridor because they feel it would permanently interfere with access to the Los Angeles River. However, they do believe that this type of route might provide a more acceptable solution if all of the tracks, including those for high-speed train, Metrolink, and Amtrak, were brought down into a covered trench.

1.2 Previously Identified Alternative Alignments

To facilitate the analysis of potential alignment alternatives, station locations and design options, the Palmdale to Los Angeles HST Section was divided into five subsections. The approximate geographic limits for each subsection were chosen at points where the HST alignment alternatives meet, such that alignment alternatives for each subsection could be “mixed and matched” with those from each adjacent subsection. The subsections are listed below, south to north and are shown in Figure 1.2-1:

- Los Angeles Union Station (LAUS) – covered in the Los Angeles to Anaheim section Supplemental Alternative Analysis Report dated July 2010.
- LAUS to Metrolink Central Maintenance Facility (CMF)
- Metrolink CMF to SR 2
- SR 2 to Sylmar
- Sylmar to Palmdale

Figure 1.2-1 Los Angeles to Palmdale Subsections

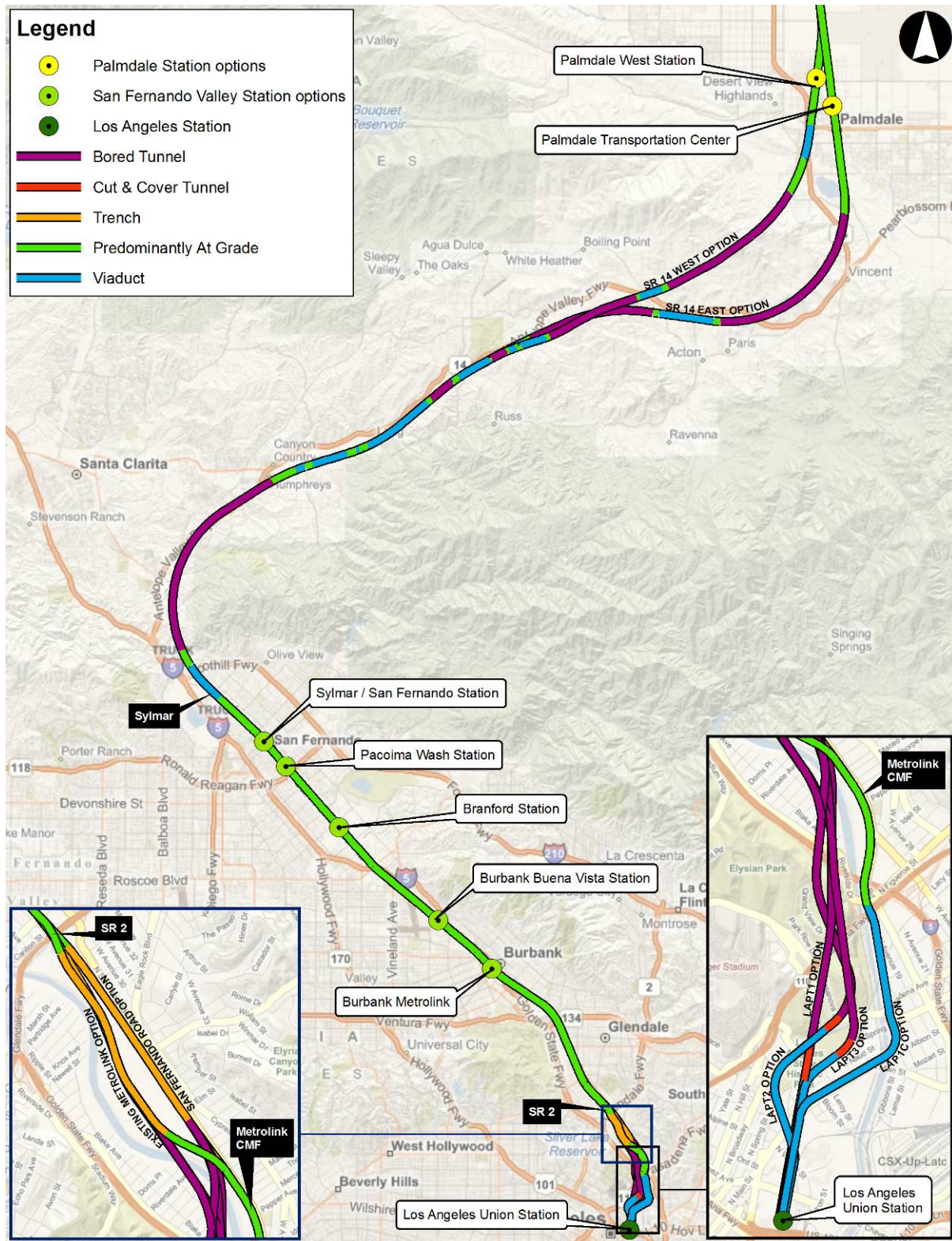


The alternatives previously identified in the Preliminary AA and concurred in by the Board to be carried forward through the Environmental Impact Report/Environmental Impact Statement (EIR/EIS) process were:

- LAUS to Metrolink Central Maintenance Facility (CMF): LAPT1, LAPT2, LAPT3, LAP1C
- Metrolink CMF to SR 2: San Fernando Road in trench, Metrolink alignment in trench
- SR 2 to Sylmar alignment: Profiles A, B1, B2, C,
- SR 2 to Sylmar stations: Burbank Metrolink, Buena Vista, Branford, Pacoima Wash, San Fernando
- Sylmar to Palmdale alignment: SR 14 East, SR 14 West,
- Sylmar to Palmdale stations: Palmdale Transportation Center and Palmdale West

Figure 1.2-2 illustrates the previously concurred-upon alignments and stations.

Figure 1.2-2 Previously Concurred-Upon Alignments and Stations



1.3 LAUS to Metrolink CMF

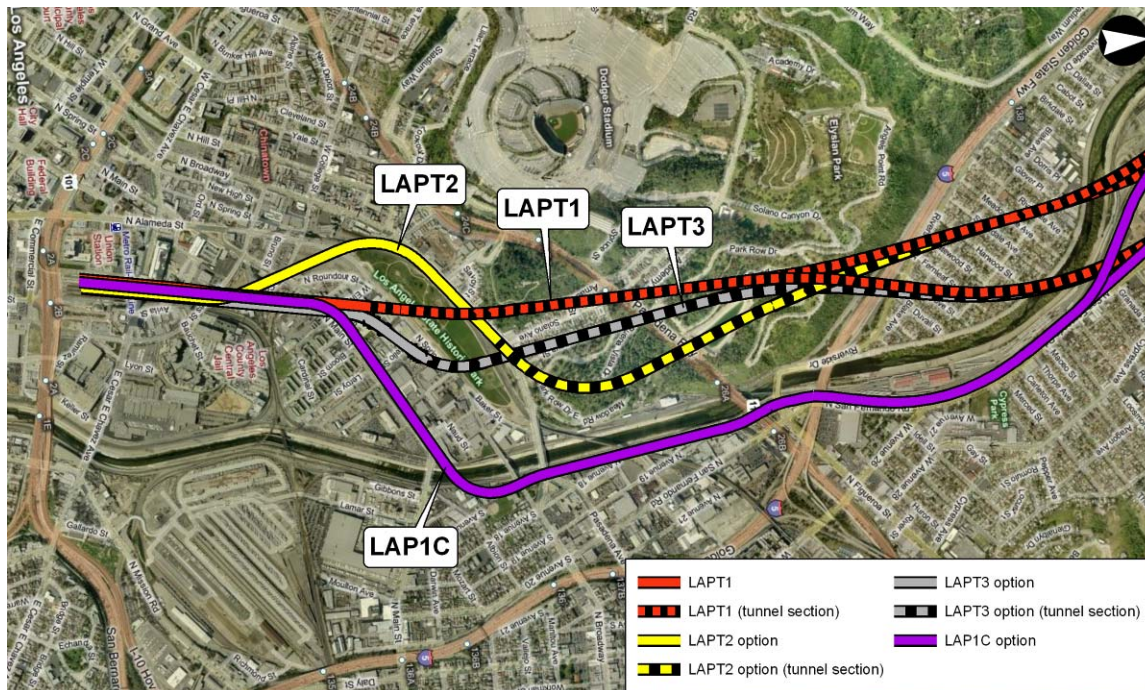
Following input from State Parks and others, in relation to their concerns as to potential impacts that alignment options would have upon the Los Angeles State Historic Park (LASHP), further study was undertaken focused on avoiding impacts to the Park.

The alternatives evaluated are LAPT1, LAPT2, LAPT3 and LAP1C. Table A-1 in appendix A lists each of the alignment alternatives considered and identifies whether or not they are recommended to be carried forward for further study through the EIR/EIS process. Key factors that distinguish among the alternatives are highlighted in the tables. As noted in the Preliminary AA, this area includes a mixture of transportation corridors, commercial and industrial uses, parks and residential communities in a highly urbanized setting. There are also a number of historic structures and archaeological sites in this area. The options selected to be carried forward here will continue to be refined to minimize impacts to these special sites and structures, to the surrounding communities, and to planned developments.

Each of the alignment alternatives would be generally consistent with the stated purpose and need and project objectives. Each would be consistent with land uses in local plans because it would enhance mobility and regional connectivity with mass transit option opportunities. However each could conflict in different ways with other planning objectives, e.g., by an option dividing existing communities or by blocking access to surrounding land uses.

Each of the four alignment alternatives is shown in Figure 1.3-1 and the performance of the three tunnel alignment alternatives against the evaluation measures is described below. **Alternative LAP1C** is unchanged from the Preliminary AA and **is recommended to be carried forward for further consideration.**

Figure 1.3-1 LAUS to Metrolink CMF Options Evaluated



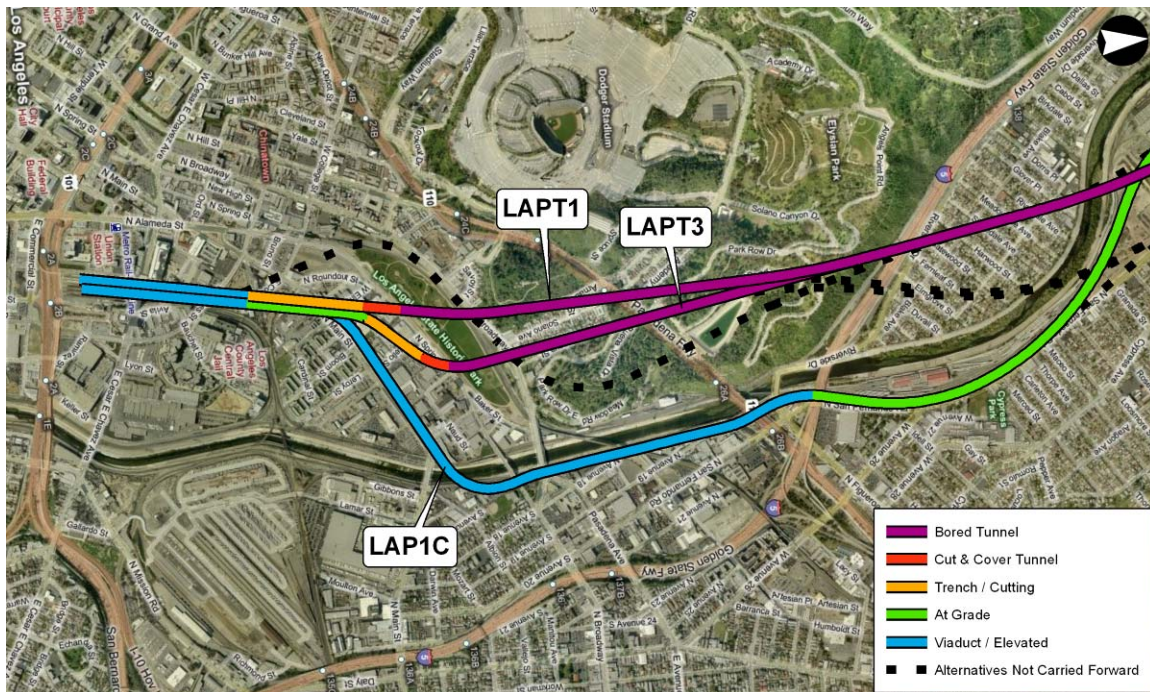
- ♦ **Alternative LAPT1** can only originate from an at-grade LAUS station – for an elevated station the gradient required to enter tunnel before the Los Angeles State Historic Park would exceed the maximum allowed by the design criteria. Roads between Vignes Street and Spring Street would need to be reconfigured or grade separated. One public and 18 small industrial parcels in this area would be affected. By using a steeper gradient and changing the track layout it has been possible to improve Alternative LAPT1 over the alignment presented in the Preliminary AA, minimizing the temporary disruption of Los Angeles State Historic Park (LASHP), and avoiding affecting the archaeological site which is currently being excavated. This alternative includes a cut and cover tunnel construction beneath Spring Street and passes beneath LASHP in bored tunnel, with a minimum thirty foot depth of soil above the tunnel to allow safe operation of the tunnel boring machine. Spring Street would be kept open by being diverted temporarily during cut and cover tunnel construction. North of the LASHP the alignment remains in bored tunnel for the rest of this subsection. This alignment **is recommended to be carried forward for further consideration** because it is the shortest, has the shortest journey time, and has impacts localized in a small area north of LAUS.

The plan and profile of this alternative are depicted on drawings LAP-CB1110 through 1114 in Appendix C.

- ♦ **Alternative LAPT2** can originate from either an at-grade or elevated LAUS station. Nine (9) industrial parcels and 1 public/open space parcels would be affected as the alignment passes on viaduct over Vignes, Main and Alameda Streets and the Gold Line. It then runs between the Gold Line and Broadway in a narrow and steeply sloping strip which would make construction complex and is not compatible with Metro plans for future additional Gold Line storage tracks and associated development in this area, or the City/Metro desire to connect Broadway direct to the Park. It would require cut and cover construction across Broadway, disrupting traffic flow during construction. The work would proceed in steps, such that with the aid of temporary detours and temporary decking, an adequate number of lanes will be maintained during peak hours of travel. Beyond Broadway the alignment is in bored tunnel and would not have further surface impacts in this subsection. While this alignment would not directly affect the LASHP, the viaduct running alongside it would have a permanent visual and noise impact on the users of the park. In the Preliminary AA this alternative was carried forward in spite of these impacts because it was the only tunnel alternative which was compatible with the elevated LAUS. Since alternative LAPT3 has been made compatible with the elevated LAUS, alternative LAPT2, which has greater environmental impacts, major construction issues, a longer journey time, and is opposed by Metro and the City of Los Angeles, **is not recommended to be carried forward for further consideration.**
- **Alternative LAPT3** has been refined from the alignment presented in the Preliminary AA, by increasing the gradient and adjusting the layout of the tracks approaching LAUS, so that it can originate from an at-grade or elevated LAUS station. Roads between Vignes Street and Spring Street would need to be reconfigured or grade separated. Twenty three (23) industrial parcels and 3 public parcels would be affected, and a church would be displaced by the trench leading to the tunnel portal. This area is scheduled for redevelopment by the City of Los Angeles. This alternative would have minimal effect on the LASHP as it passes beneath it in bored tunnel. Further design development has allowed this option to avoid displacement of the Raphael Junction Block Building which was highlighted as an impact in the Preliminary AA. Beneath the LASHP and further north in this subsection the alignment in bored tunnel would not have further surface impacts. This alignment **is recommended to be carried forward for further consideration** because it makes the environmental advantages of a tunneled option available with the elevated LAUS option.

The plan and profile of this alternative are depicted on drawings LAP-CB1310 through 1314 in Appendix C.

Figure 1.3-2 LAUS to Metrolink CMF Options Carried Forward



1.3.1 Interface with Los Angeles to San Diego section

Most of the options being considered for the Los Angeles to San Diego section involve connection to the Los Angeles to Anaheim tracks south of LAUS. Alternatives which would link to each of the Palmdale to Los Angeles options carried forward (LAPT1, LAPT3 and LAP1C) are also being investigated. The interface of the Los Angeles to San Diego tracks with these options, and the operational and environmental impacts from these tracks, are described in the Los Angeles to San Diego section Preliminary AA report dated March 2011.

1.4 Metrolink CMF to SR 2

Following input from State Parks and others, where concerns were noted as to the impact of the alignment options on the Rio de Los Angeles State Park, further study of the options was undertaken and the at-grade alternative, which was not carried forward in the Preliminary AA, was further considered.

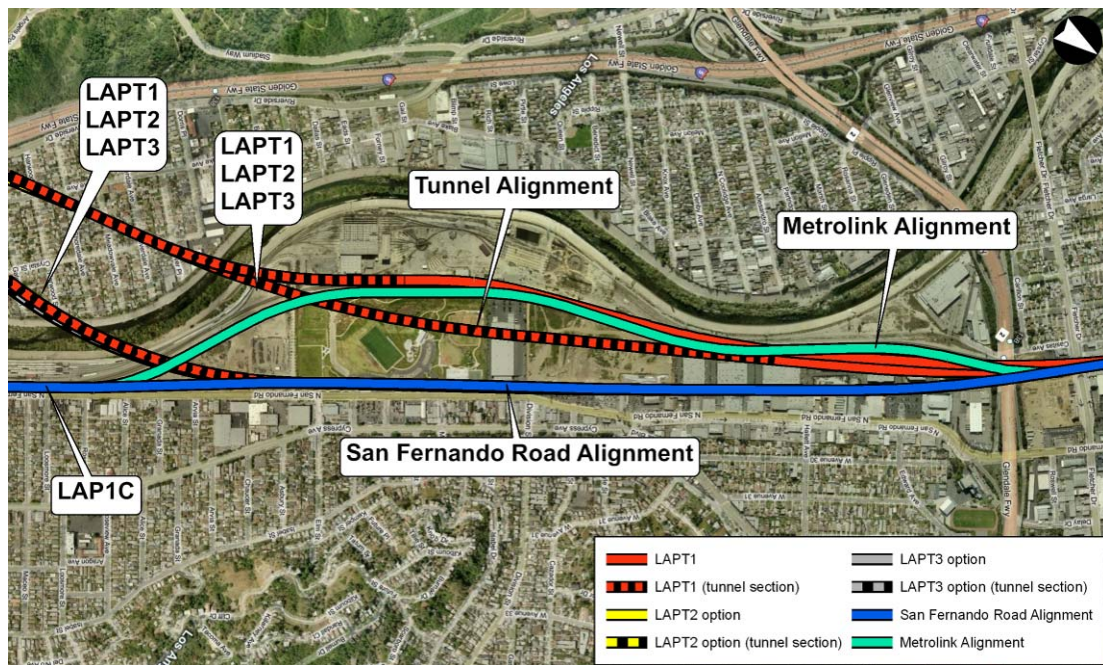
The alternatives evaluated are:

- Tunnel alignment - A HST alignment that would go in bored tunnel beneath the Rio de Los Angeles State Park and the high school then rise through a trench to pass beneath SR 2 at-grade.
- Metrolink Alignment in trench – A HST alignment that would follow the existing Metrolink/Amtrak/freight corridor in a partially covered trench then rise to pass beneath SR 2 at-grade.
- San Fernando Road Alignment in trench - A HST alignment that would follow the west side of San Fernando Road in a partially covered trench then rise to pass beneath SR 2 at-grade.

- Metrolink Alignment at-grade – A HST alignment that would follow the existing Metrolink/Amtrak/freight corridor, at-grade.

Table A-2 in Appendix A lists each of the alignment alternatives considered and identifies whether or not they are recommended to be carried forward for further study through the EIR/EIS process. Key distinguishing factors among the alternatives are highlighted in the tables. Each of the alignment alternatives is shown in Figure 1.4-1 and the performance of the alignment alternatives against the evaluation measures is described below.

Figure 1.4-1 Metrolink CMF to SR 2 Options evaluated



The tunnel alternative is a continuation of the tunnel alternatives LAPT1, LAPT2 and LAPT3. It would run in bored tunnel beneath the Park and high school to a portal near Hallett Avenue. The HST alignment then continues in trench rising to join the existing Metrolink corridor at SR 2, requiring a number of industrial displacements, to pass under SR 2 at-grade. For this alternative the existing tracks carrying Metrolink, Amtrak and freight traffic would be unaffected until near SR2. This is the most costly alternative. This option **is recommended to be carried forward for further consideration** because it is compatible with the tunnel alternatives from LAUS, and offers journey time advantages with least impact to RDLASP and the high school.

Metrolink alignment trench alternative, the HST tracks for Alternative LAP1C would curve along the western edge of Rio de Los Angeles State Park (RDLASP) in a partially covered trench and continue to parallel the existing tracks to SR 2. Metrolink has stated that sharing a trench with HST would not be feasible, and UPRR has also raised operational and safety concerns with being in a trench with Metrolink and HST at this location, so these existing tracks would remain at-grade. The curves on this alternative for the surface alignments limit speed to 60 mph and increase journey time compared with the San Fernando Road Alignment and Tunnel alignment. For the tunnel alternatives the portal would be part of the way along the RDLASP. This alternative would make the barrier between RDLASP and the Los Angeles River, currently formed by the Metrolink/Amtrak/freight tracks, even more difficult to overcome

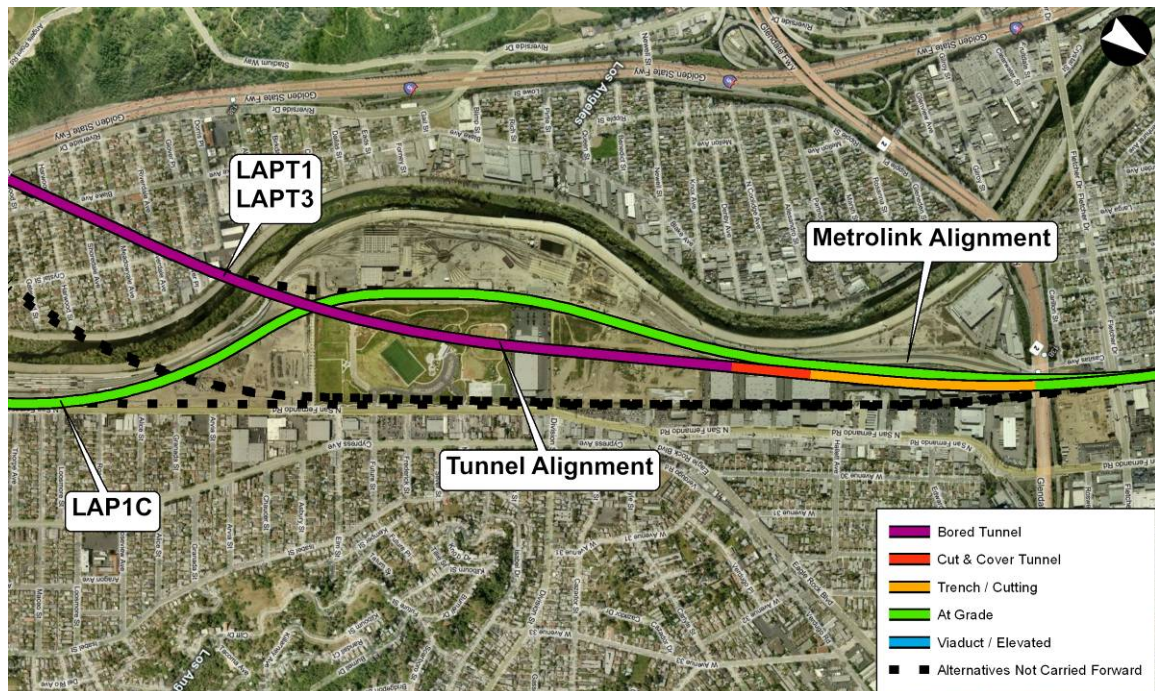
by ruling out the possibility of constructing pedestrian passages under the tracks to give access from the Park to the river. This alternative **is not recommended to be carried forward for further consideration** because it would have major construction issues, would have operational deficiencies and be less capable of meeting the project purpose and need and project objectives, and would have greater environmental issues since it increases the barrier between RDLASP and the river.

San Fernando Road trench alternative would abut the west side of the road between I-5 and Division Street in the case of Alternative LAP1C, or between the south end of Rio de Los Angeles State Park and Division Street in the case of the tunnel alternatives. Metrolink has stated that sharing a trench with HST would not be feasible, and UPRR has also raised operational and safety concerns with being in a trench with Metrolink and HST at this location, so these tracks would remain on their at-grade alignment between the park and the river. This alignment has a direct affect on RDLASP, reducing its area, and would affect the school playing fields, particularly during construction. Introducing a new rail corridor along San Fernando Road, would surround the park and the school with live railway tracks which would have more environmental impact. This could be partially mitigated for all alternatives by partially covering the trench for lengths of up to 800 feet (based on ventilation and emergency evacuation considerations), to improve connectivity in general and pedestrian and vehicular access. This option is not acceptable to State Parks or local community groups. At Division Street, San Fernando Road turns away whereas the HST alignment for all three alternatives begins to veer northwest, to join the existing Metrolink corridor at SR 2. The profile would climb out of the trench in this second stretch, requiring a number of industrial displacements, to pass under SR 2 at-grade. For this alternative the existing tracks carrying Metrolink, Amtrak and freight traffic would be unaffected until near SR2. This option **is not recommended to be carried forward for further consideration** because of the greater environmental impacts described above.

Since the Metrolink alignment trench alternative increases the barrier between RDLASP and the river, the **Metrolink alignment at-grade alternative**, which was not carried forward in the Preliminary AA, was re-evaluated. With this alignment the HST tracks would curve along the western edge of Rio de Los Angeles State Park and continue to parallel the existing tracks to SR 2. This is only compatible with alignment LAP1C, as the tunnel alignments cannot connect with the Metrolink alignment at-grade without significantly exceeding the permissible maximum gradient for HST tracks. The curves on this alternative limit speed to 60 mph and increase journey time compared with the San Fernando Road Alignment or tunnel alignment. This is the least expensive solution to construct. The barrier between the Rio de Los Angeles State Park and the Los Angeles River currently formed by the Metrolink/Amtrak/freight tracks impedes opening up the park to the river in the future and is inconsistent with goals of the Los Angeles River Revitalization Master Plan. However State Parks felt that this barrier could be mitigated by providing additional pedestrian undercrossings under both the HST and Metrolink/Amtrak/freight tracks. Noise impacts on users of the Park and on the new high school campus will be higher for this alternative. This alternative **is recommended to be carried forward for further consideration** because it is compatible with the LAP1C alternative, would be less expensive to construct, and it would be possible to reduce the effect of the barrier currently formed between the Park and the river by the Metrolink/Amtrak/freight tracks.

These alignments are shown on the drawings for options LAPT1, LAPT3 and LAP1C in Appendix C.

Figure 1.4-2 Metrolink CMF to SR 2 Options carried forward

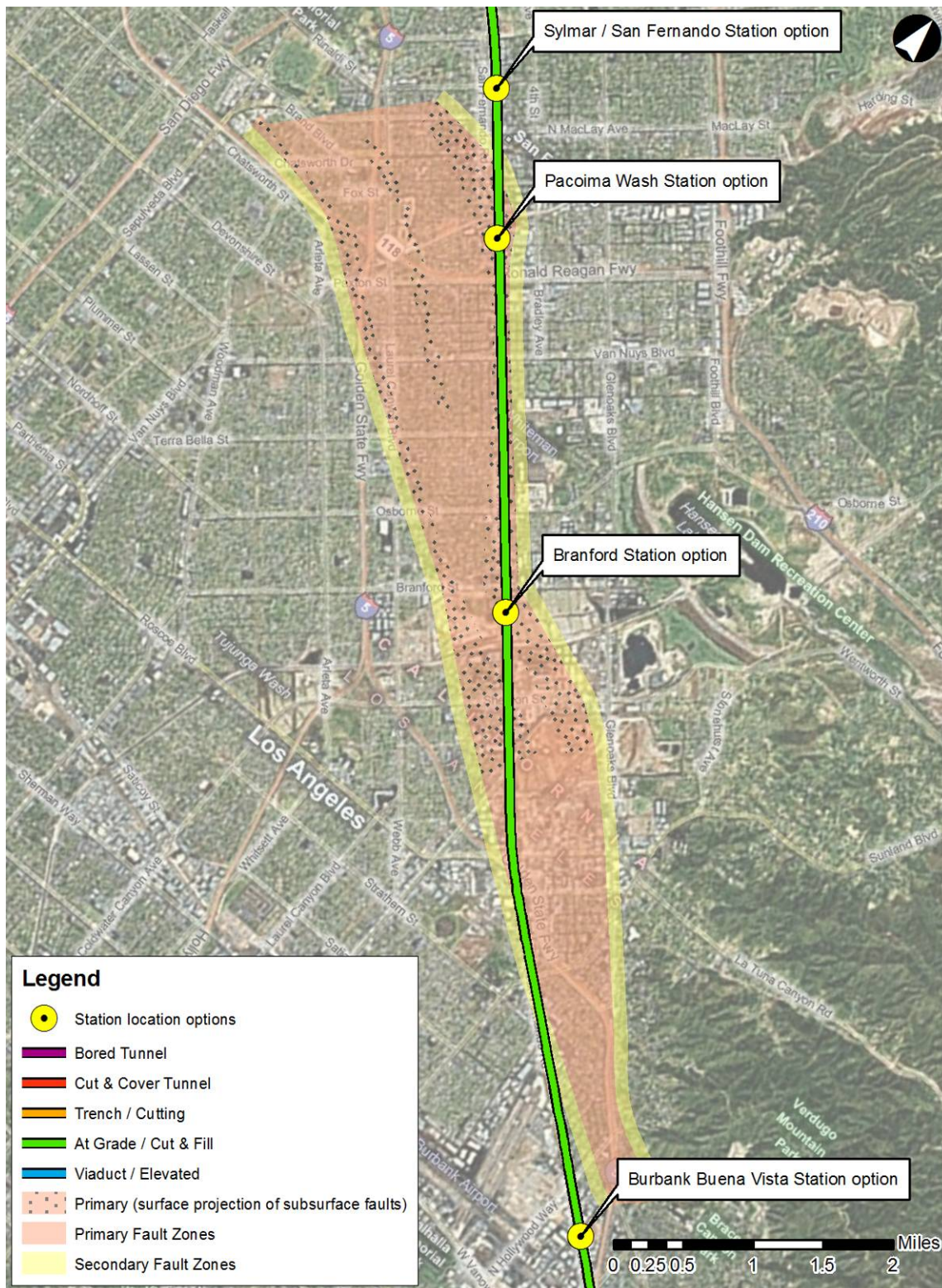


1.5 SR 2 to Sylmar

Further investigation of the Verdugo fault has led to the designation of a six mile length of the HST alignment between Sunland Boulevard in Sun Valley and Brand Boulevard in San Fernando as a fault hazard zone, as shown in Figure 1.5-1. While a probability assessment has indicated that the risk of fault rupture is low, the HST alignment will be kept as close as possible to at-grade to make it possible to resume operational service quickly in the event of major seismic activity.

Table A-3 in Appendix A lists each of the station alternatives considered and identifies whether or not they are to be carried forward for further study through the EIR/EIS process. Key factors that distinguish among the alternatives are highlighted in the tables. No changes to the location of Burbank Buena Vista, Branford Street and Sylmar/San Fernando stations evaluated in the Preliminary AA have been made, but the profiles for Branford Street and Sylmar/San Fernando stations have been adjusted to keep as close to at-grade as possible through the Verdugo Fault zone. These three stations are carried forward for further consideration.

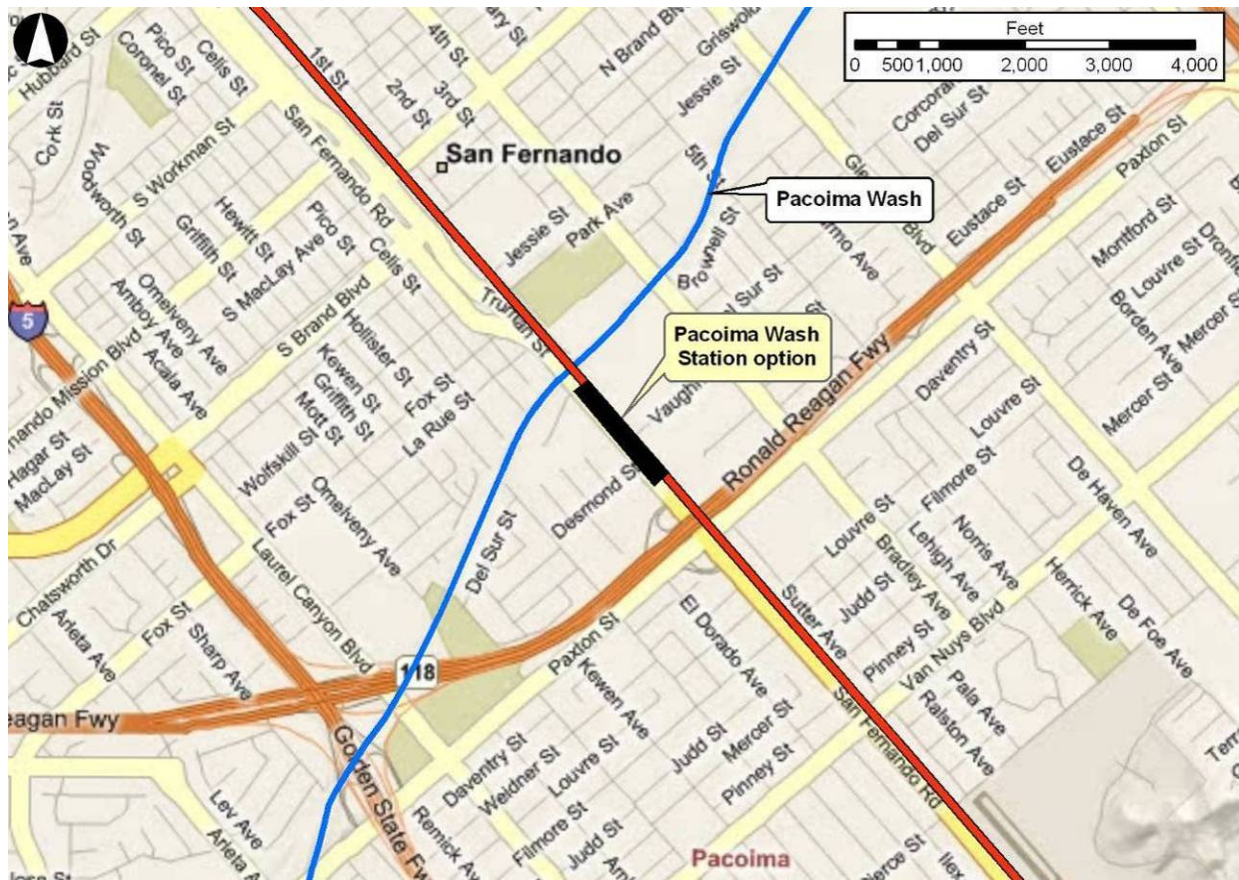
Figure 1.5-1 Verdugo Fault



Alternative PWS – Pacoima Site

The Pacoima Wash Station site option would be located between SR 118 and Pacoima Wash in Los Angeles/Pacoima. See Figure 1.5-2.

Figure 1.5-2 Pacoima Wash Station Option



The HST track alignment is constrained by the Pacoima Wash north of the platforms and the SR 118 freeway bridge to the south of the platforms. To pass over the wash and through the freeway bridge the platforms would need a 1% gradient which does not meet the engineering requirements for station platforms. To achieve acceptable gradients for the station platforms the HST tracks would need to be either in a deep trench under the Wash, or on a high viaduct over the freeway bridge, or a long section of the SR 118 freeway would need to be rebuilt at a higher elevation.

The trench would require reconstruction of the freeway bridge and a new bridge to carry the Wash over the trench. Construction of the trench and bridges would require temporary diversion of the freeway and the wash over an extended period and so this option has not been considered further.

The viaduct would be about 3 miles long and up to 60 feet high, with heavy through truss girders for the long span over the freeway. Much of the length of the viaduct, and the station platforms, are within the Fault Hazard Zone of the potentially active Verdugo fault, and so constructing an elevated station would be a seismic risk. The viaduct south of the freeway would impact the new development to the east of the ROW (Plaza Pacoima Shopping Center, directly impacting the Costco store). Steep gradients would be

needed for the viaduct. Additionally the station platform would be approximately 60 feet above grade. The station design would be challenging, however, the City Redevelopment Agency considers this area as a potential re-development region. The height of an elevated station would result in visual impacts to the community.

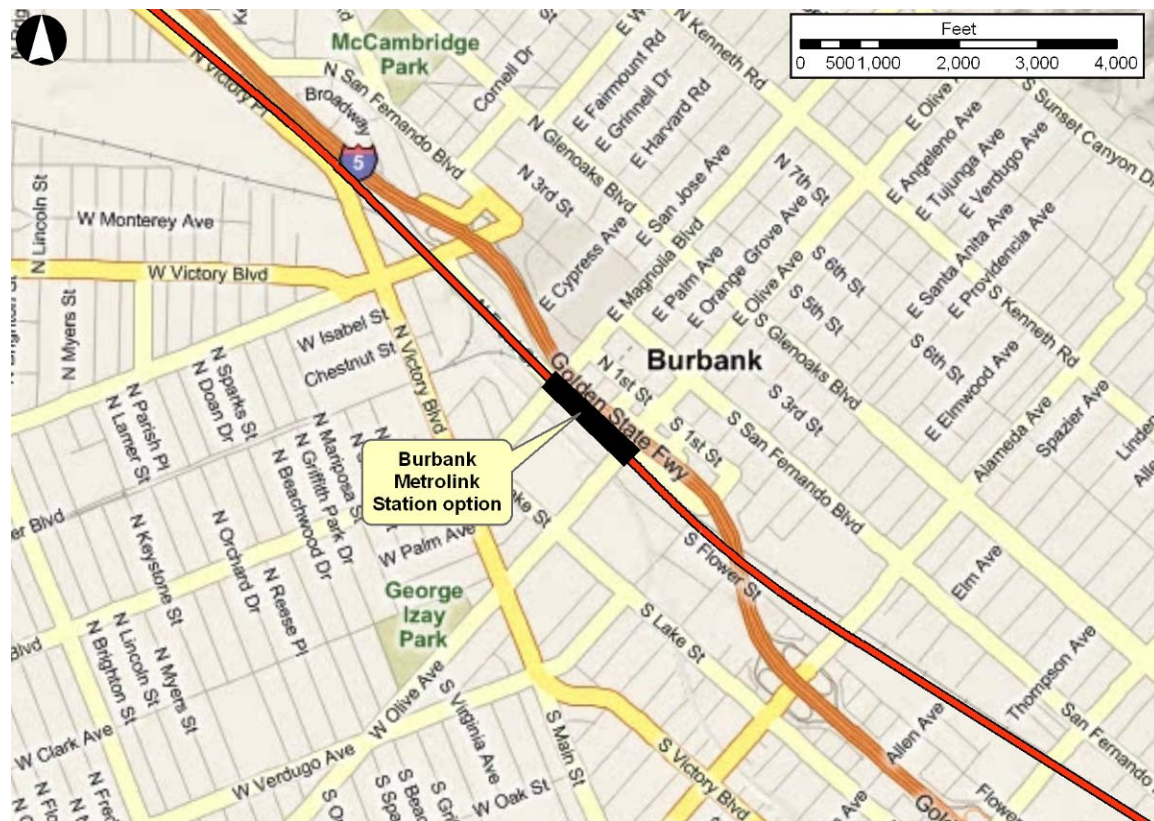
Rebuilding SR 118 at a higher elevation would require closure of the interchange with San Fernando Road and temporary diversion of the freeway over an extended period, and would include rebuilding the ramps for the SR 118 intersection with I-5.

For these reasons this option is not practicable and has greater environmental impacts and **is recommended not to be carried forward for further consideration.**

Alternative BMS - Burbank Metrolink site

The downtown Burbank station location alternative would be located at the Burbank Metrolink station, between Olive Avenue and Magnolia Boulevard in the City of Burbank. See Figure 1.5-3.

Figure 1.5-3 Burbank Metrolink Station Option

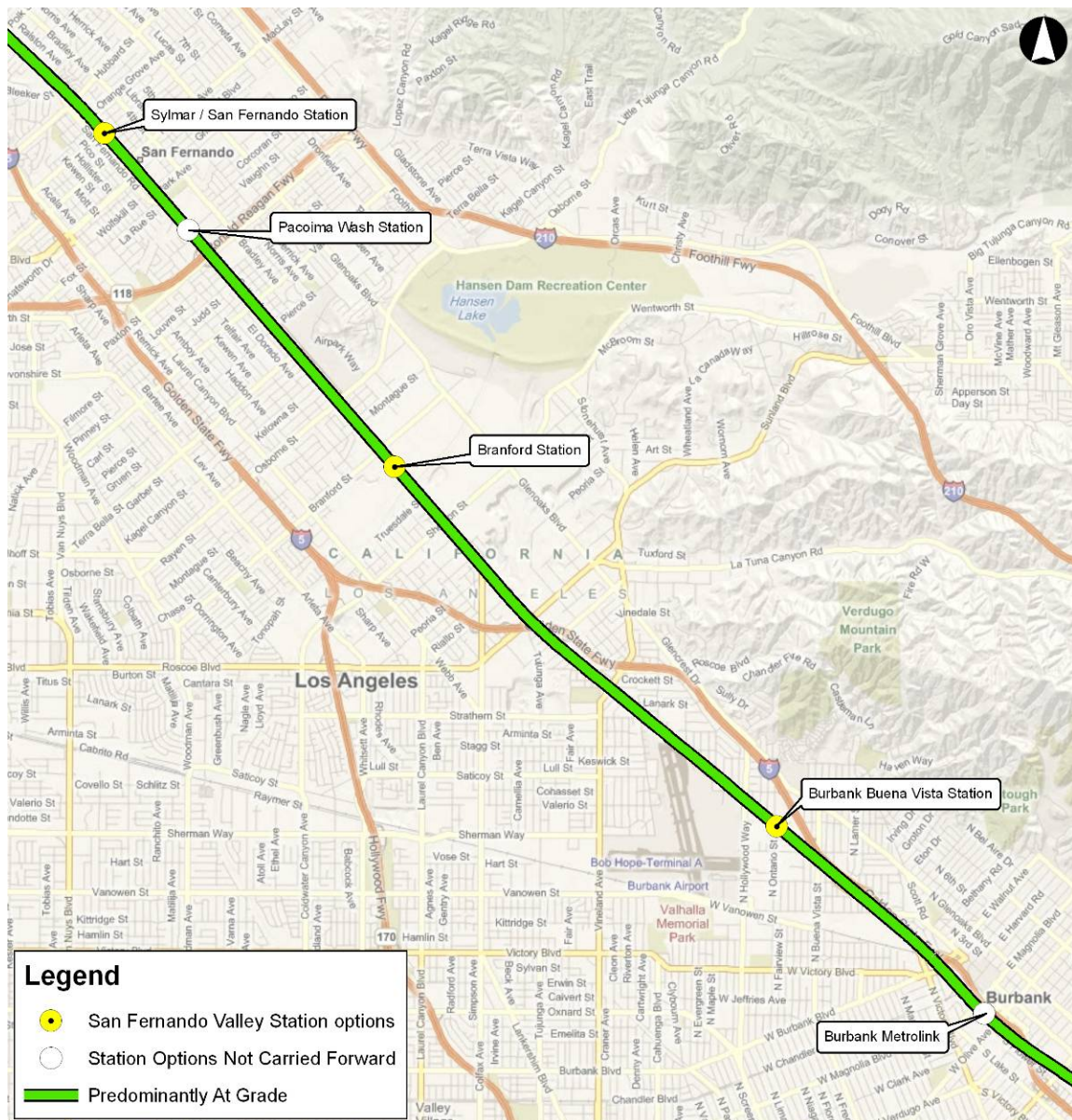


The six tracks (four for HST and two for Metrolink/Amtrak/freight) and platforms required at the station would take up most of the space between the I-5 freeway to the east and the power station to the west. The station buildings would need to be either at some distance from the tracks, on the downtown side of the I-5, or elevated over the Metrolink/Amtrak/freight tracks and a new pedestrian bridge across the I-5 freeway and the tracks would be needed. Available parking areas are not adjacent to the station boarding platform areas and are dispersed on both the east and west side of the I-5. Parking areas on the west side of I-5 would be best served by shuttle bus service. Streets leading from the freeway network to these parking structures are already congested and would be difficult to widen. In order to

construct the station and tracks the bridges carrying Olive Avenue, Magnolia Boulevard, Burbank Boulevard and the I-5 freeway would need to be reconstructed. This option is not practicable and is **recommended not to be carried forward for further consideration** for these reasons.

This option is shown on drawings LAP-CB2704 to 2707 in Appendix C.

Figure 1.5-4 San Fernando Valley Stations Carried Forward



1.6 Sylmar to Palmdale Alignments

Refinements to the SR 14 East alignment have been made as described below:

Further investigation of the San Gabriel fault, which all the alignment options cross in tunnel, has quantified the possible movement at this fault. A probability assessment has indicated that the risk of fault rupture is low. Further studies have shown that any alignment which crossed the fault at-grade would have major impacts on journey time and on residential properties, and would require high viaducts which would be at risk in a major seismic event which would cause fault rupture. An enlarged chamber extending over the primary fault hazard zone will be provided in the tunnel to allow rapid recovery after fault rupture, should it occur.

The SR 14 East alternative has been refined from the alignment shown in the Preliminary AA to avoid the proposed Vasquez High School development, and the High Desert School in Acton. Comments and suggestions received through stakeholder and community outreach continue to be evaluated.

North of the San Andreas Fault zone, the alignment continues at-grade within the west side of the UPRR right-of-way with grade-separated junctions needed for Avenue R, and Palmdale Boulevard (SR 138) to pass over the HST. North of Palmdale Boulevard, the alignment levels out to accommodate the at-grade Palmdale Station alternative in the vicinity of the existing Metrolink Station.

At the north end of the station, where the Sierra Highway crosses the existing UPRR, the highway will need to be elevated over the HST.

Erratum from Preliminary AA: The Soledad Canyon Alternative ... was recommended not to be considered further by ~~U.S. Army Corps of Engineers and~~ U.S. Environmental Protection Agency, who have written to the Authority confirming their belief that the other three alignments being studied provide a much greater opportunity to find the Least Environmentally Damaging Practicable Alternative along this segment.

2.0 RECOMMENDATION

The staff makes the following recommendations to the Board. These recommendations are summarized in Table 2.0-1 and, along with the recommendations carried forward unchanged from the Preliminary AA, are illustrated on Figure 2.0-1:

LAUS to Metrolink CMF

- ♦ Carry forward alternative LAPT1
- ♦ Do not carry forward alternative LAPT2
- ♦ Carry forward alternative LAPT3
- ♦ Carry forward alternative LAP1C

Metrolink CMF to SR 2

- Carry forward Metrolink Alignment at-grade with alignment LAP1C
- Do not carry forward Metrolink Alignment in trench
- Do not carry forward San Fernando Road Alignment in trench
- ♦ Carry forward Tunnel alignment with alignments LAPT1 and LAPT3

SR2 to Sylmar Subsection – Station alternatives

- Do not carry forward Burbank Metrolink Station

- Carry forward Burbank Buena Vista Station
- Carry forward Branford Street Station
- Do not carry forward Pacoima Wash Station
- Carry forward San Fernando Station

Sylmar to Palmdale

- ♦ Continue to coordinate with stakeholders and communities to work toward addressing concerns, in order to refine the alignment proposals to be carried forward for full environmental study.

Figure 2.0-1 Alignment and Station Alternatives

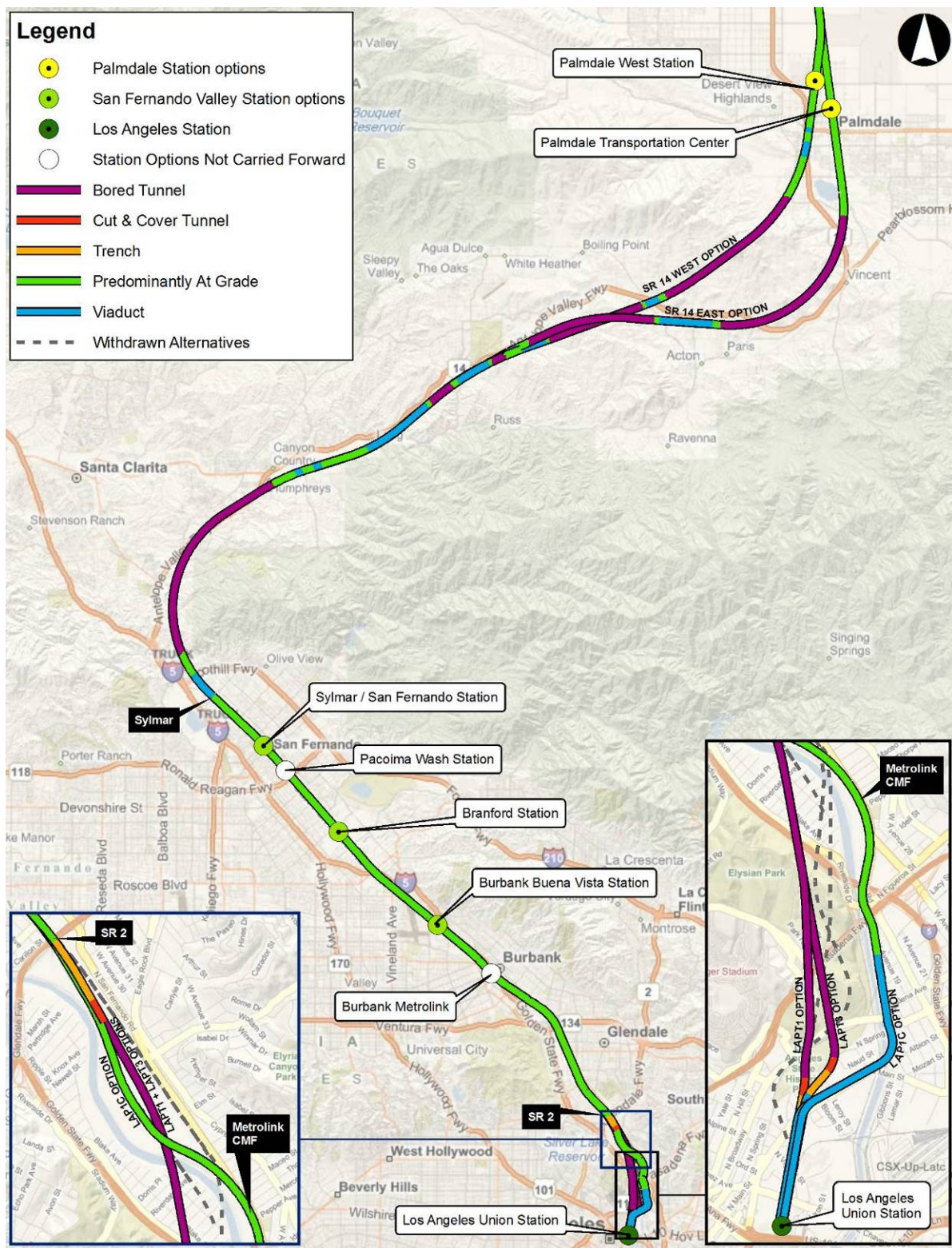


Table 2.0-1 Alternatives Evaluation Summary

ALIGNMENT ALTERNATIVE/STATION LOCATION AND DESIGN OPTIONS	AA DECISION		REASONS FOR ELIMINATION (P–Primary S–Secondary)							ENVIRONMENTAL/OTHER CONCERNS
	Carried Forward	Not Carried Forward	Construction	Incompatibility	Right-of-Way	Connectivity/ Accessibility	Revenue/ Ridership	Community Impact	Environment	
LAUS to Metrolink CMF										
LAPT1	X									Only compatible with at-grade LAUS; Business displacements; Residential/business/institutional subsurface easements; Construction costs.
LAPT2		X	S	S	P			S		Runs alongside LASHP on viaduct; Business displacements; Incompatible with Gold Line/Midway yards development; Residential/business/institutional subsurface easements; Visual resources; Construction complexity, impacts and costs; local opposition.
LAPT3	X									Adjacent to LASHP; Business/institutional displacements; Low speed curves leaving Union Station; Residential/business/institutional subsurface easements; Construction costs
LAP1C	X									Residential/business/institutional displacements; Cultural and visual resources; Low speed curves leaving Union Station.

ALIGNMENT ALTERNATIVE/STATION LOCATION AND DESIGN OPTIONS	AA DECISION		REASONS FOR ELIMINATION (P–Primary S–Secondary)							ENVIRONMENTAL/OTHER CONCERNS	
	Carried Forward	Not Carried Forward	Construction	Incompatibility	Right-of-Way	Connectivity/ Accessibility	Revenue/ Ridership	Community Impact	Environment		
Metrolink CMF to SR 2											
Metrolink Alignment, At-grade	X									Only compatible with LAP1C alternative; Reduced design speed. Connectivity between the Rio de Los Angeles State Park and the Los Angeles River can be mitigated with subways; Impact to existing railroad; Visual impact; Business displacements.	
Metrolink Alignment, in Trench		X				P		S		Reduced design speed; Connectivity between RDLASP and the Los Angeles River; Impact to existing railroad; Business displacements.	
San Fernando Road Alignment, in Trench		X	S					S	P	Impact on Rio de Los Angeles State Park; Business displacements; Impact to Central Region High School No. 13.	
Tunnel alternative	X									Only compatible with LAPT1 and LAPT3; Construction cost; Business displacements;	
SR 2 to Sylmar											
Station Alternatives (for a Single HST Station in San Fernando Valley)											
Burbank Metrolink Station		X	P	S	P			P		Freeway connectivity; Residential/business displacements; Noise and vibration; Constructability; Construction cost.	
Burbank Buena Vista Alternative BVS	X									Business displacements; Traffic impacts and freeway connectivity; Noise and vibration; Hazardous materials.	
Branford Alternative BSS	X									Adjacent water recharge ponds; Business displacements; Biological resources; Hazardous materials.	

ALIGNMENT ALTERNATIVE/STATION LOCATION AND DESIGN OPTIONS	AA DECISION		REASONS FOR ELIMINATION (P–Primary S–Secondary)							ENVIRONMENTAL/OTHER CONCERNS
	Carried Forward	Not Carried Forward	Construction	Incompatibility	Right-of-Way	Connectivity/ Accessibility	Revenue/ Ridership	Community Impact	Environment	
Pacoima Wash Alternative PWS		X	P			S		P		Elevated (60 feet above ground) station with long span bridge over freeway extending into Verdugo fault hazard zone, or major impacts on freeway from at-grade station; Business displacements; Visual resources; Noise and vibration; Construction cost.
Sylmar/San Fernando Alternative SFS	X									Station outside Metro right-of-way to comply with design criteria; Constrained TOD potential; Business displacements. Cultural resources; Noise and vibration.

CALIFORNIA HIGH-SPEED TRAIN

Project Environmental Impact Report
/Environmental Impact Statement

SUPPLEMENTAL Palmdale to Los Angeles

Alternative Analysis Report Volume 2

March 2011



CALIFORNIA
High-Speed Rail Authority



U.S. Department of Transportation
Federal Railroad Administration



APPENDIX A - DETAILED EVALUATION TABLES

Table A-1 LAUS to Metrolink CMF Subsection – Evaluation Matrix

LAUS to Metrolink CMF Subsection – Evaluation Matrix				
Measurement Criteria	Alternative LAPT1 Tunnel from At-Grade LAUS (Carried Forward)	Alternative LAPT2 Tunnel from At-Grade or Elevated LAUS (Not Carried Forward)	Alternative LAPT3 Tunnel from At-Grade or Elevated LAUS (Carried Forward)	Alternative LAP1C Viaduct from At- Grade or Elevated LAUS (Carried Forward)
Design Objectives				
Journey time	2.7 minutes	3.5 minutes	2.3 minutes	3.9 minutes
	2.36 miles	2.69 miles	2.46 miles	2.72 miles
Intermodal Connections	Connections with Amtrak, Metrolink, Metro rail and bus at Los Angeles Union Station	Connections with Amtrak, Metrolink, Metro rail and bus at Los Angeles Union Station	Connections with Amtrak, Metrolink, Metro rail and bus at Los Angeles Union Station	Connections with Amtrak, Metrolink, Metro rail and bus at Los Angeles Union Station
Operating Costs	Higher because of tunnel ventilation	Higher because of tunnel ventilation	Higher because of tunnel ventilation	Lower
Capital Cost Factor	2.0	1.9	1.8	1.0
Land Use				
Transit Oriented Development (TOD) Potential	Currently, the Los Angeles Union Station is in operation and serves as a transfer location terminus for metro rail transportation through the Los Angeles Basin. The TOD potential is high as the terminus is located in dense industrial, public, and commercial uses.	Similar to LAPT1	Similar to LAPT1	Similar to LAPT1
Consistency with Other Planning	<p>All alternatives would be consistent with:</p> <ul style="list-style-type: none">Land uses in the Los Angeles City Community Plans: Central City, Silver Lake-Echo Park-Elysian Valley, Northeast Los Angeles, and Boyle Heights.the City of Los Angeles Central City Community Plan objectives to: keep downtown as the focal point of the regional mobility system accommodating internal access and mobility needs as well. Encourage rail connections that will serve the downtown traveler, and improve freeway movement and capacity adjacent to the Downtown area.the City of Los Angeles Central City North Community Plan objectives to: Develop a public transit system that improves mobility with convenient alternatives to automobile travel, encourage alternative modes of transportation to the use of single occupant vehicles (SOV) in order to reduce vehicular trips, and encourage the expansion of transit programs aimed at enhancing the mobility of senior citizens, disabled persons, and the transit-dependent population.the City of Los Angeles Boyle Heights Community Plan objectives to: Maximize the effectiveness of public transportation to meet the travel needs of transit-dependent residents, encourage alternate modes of travel and provide an integrated transport system, and a transportation system that is coordinated with land uses and which can accommodate the total travel needs of the Community.City of Los Angeles – Northeast Los Angeles Community Planning Area to: Develop an intermodal mass transportation plan to implement linkages to future mass transit service.City of Los Angeles – Los Angeles State Historic Park General Plan to: Explore opportunities to link pedestrian and cycling trails within the Park with neighborhood and regional transportation systems, including regional trails. <p>All alternatives would be inconsistent with:</p> <p>City of Los Angeles – Northeast Los Angeles Community Planning Area to: Require that any proposed development be designed to enhance and be compatible with adjacent development. However, the project team will work with the City and the stakeholders during the project development phase to minimize any incompatibilities with the adjacent developments.</p>			

LAUS to Metrolink CMF Subsection – Evaluation Matrix				
Measurement Criteria	Alternative LAPT1 Tunnel from At-Grade LAUS (Carried Forward)	Alternative LAPT2 Tunnel from At-Grade or Elevated LAUS (Not Carried Forward)	Alternative LAPT3 Tunnel from At-Grade or Elevated LAUS (Carried Forward)	Alternative LAP1C Viaduct from At- Grade or Elevated LAUS (Carried Forward)
Consistency with Other Planning (cont'd)	Alternative LAPT1 would be consistent with the land uses in the Los Angeles City Community Plans: Central City North This alternative would be compatible with planned developments under the following plans: <ul style="list-style-type: none">Los Angeles State Historic Park General Plan, although a tunnel portal will be placed near the east end of the park, resulting in temporary construction impacts.CRA/LA Clean Tech Corridor Plan This alternative would not be compatible with planned developments under the following plans: <ul style="list-style-type: none">Los Angeles River Revitalization Master Plan,Cornfield Arroyo Seco Specific Plan,	Alternative LAPT2 would be consistent with the land uses in the Los Angeles City Community Plans: Central City North. This alternative would be compatible with planned developments under the following plans: <ul style="list-style-type: none">Los Angeles State Historic Park General Plan, although a tunnel portal will be placed near the east end of the park, resulting in temporary construction impacts.CRA/LA Clean Tech Corridor Plan This alternative would not be compatible with planned developments under the following plans: <ul style="list-style-type: none">Los Angeles River Revitalization Master PlanCornfield Arroyo Seco Specific Plan	Alternative LAPT2 would be consistent with the land uses in the Los Angeles City Community Plans: Central City North. This alternative would be compatible with planned developments under the following plans: <ul style="list-style-type: none">Los Angeles State Historic Park General Plan, although a tunnel portal will be placed near the east end of the park, resulting in temporary construction impacts.CRA/LA Clean Tech Corridor Plan This alternative would not be compatible with planned developments under the following plans: <ul style="list-style-type: none">Los Angeles River Revitalization Master PlanCornfield Arroyo Seco Specific Plan	Alternative LAP1C would not be consistent with the land uses in the Los Angeles City Central City North Community Plan as the alignment will travel on a high (40'-50')viaduct very close to residential land uses This alternative would be compatible with planned developments under the following plans: <ul style="list-style-type: none">Los Angeles State Historic Park General PlanCRA/LA Clean Tech Corridor Plan This alternative would not be compatible with planned developments under the following plans: <ul style="list-style-type: none">Los Angeles River Revitalization Master PlanCornfield Arroyo Seco Specific Plan
Constructability				
Constructability	Bored tunnel beneath park, houses and Los Angeles River will require easements. Cut and cover beneath Spring Street will be less complex than beneath Broadway, but will require temporary bridges to maintain Spring Street traffic during construction.	Constructing the viaduct in a narrow strip of land between the Gold Line and Broadway, and constructing the cut and cover section of tunnel under Broadway will be complex. Once the Gold Line Yard development has been completed HST construction on this alignment would not be possible.	Bored tunnel beneath park, houses and Los Angeles River will require easements. Cut and cover beneath Spring Street will be less complex than beneath Broadway, but will require temporary bridges to maintain Spring Street traffic during construction.	Constructing the viaduct crossing over the Los Angeles River and the Metrolink tracks on a skew will be complex.
Disruption to Existing Railroad	Interface with existing railroads is limited to a small section immediately north of LAUS. Gold Line on viaduct emerging from LAUS would need to be diverted	Interface with existing railroads is limited to a small section immediately north of LAUS. Phasing of construction will be complex for the elevated LAUS option. Gold Line on viaduct emerging from LAUS would need to be diverted for the at-grade station option.	Interface with existing railroads is limited to a small section immediately north of LAUS. Phasing of construction will be complex for the elevated LAUS option. Gold Line on viaduct emerging from LAUS would need to be diverted for the at-grade station option.	Interface with existing railroads is limited to a small section immediately north of LAUS, the crossing near the Los Angeles River and running alongside the east bank tracks. Phasing of construction will be complex for the elevated LAUS option. Gold Line on viaduct emerging from LAUS would need to be diverted for the at-grade station option.

LAUS to Metrolink CMF Subsection – Evaluation Matrix				
Measurement Criteria	Alternative LAPT1 Tunnel from At-Grade LAUS (Carried Forward)	Alternative LAPT2 Tunnel from At-Grade or Elevated LAUS (Not Carried Forward)	Alternative LAPT3 Tunnel from At-Grade or Elevated LAUS (Carried Forward)	Alternative LAP1C Viaduct from At- Grade or Elevated LAUS (Carried Forward)
Disruption to and Relocation of Utilities	Most of this segment is in tunnel, thereby minimizing impact on utilities, except in trench segments transitioning to tunnel. Utilities within the right-of-way include: <ul style="list-style-type: none">2 x 20" high pressure (HP), 8 MP gas crossings2 x 20" oil crossings1 x 230 KV electrical crossing2 telecom crossings11 storm crossings, 2 over 7.5' wideLos Angeles River crossing19 sewer crossings, one 48" diameter21 water crossings including 6 x 36" diameter and upElysian Reservoir crossing Of these utilities, crossings in trench areas include: 7 MP gas, one 20" oil, 3 storm, 8 sewer, and 3 water. There is also one longitudinal storm conflict in the trench area. Storm and sewer crossings in trench areas may require siphons or pump stations.	Most of this segment is in tunnel, thereby minimizing impact on utilities, except in trench segments transitioning to tunnel. Utilities within the right-of-way include: <ul style="list-style-type: none">1 HP, 2 MP gas crossings2 x 20" oil crossings1 x 230 KV electrical crossing2 telecom crossings, 1 longitudinal ½ mile7 storm crossings, one 7.5' wideLos Angeles River crossing10 sewer crossings, one 48" diam, 1 longitudinal ¼ mile23 water crossings including 8 x 36" diameter and upElysian Reservoir crossing Of these utilities, crossings in trench areas include: 1 storm, 2 sewer, and 2 water. There is also one longitudinal conflict for each of telecom, storm, sewer, and water. Storm and sewer crossings in trench areas may require siphons or pump stations.	Most of this segment is in tunnel, thereby minimizing impact on utilities, except in trench segments transitioning to tunnel. Utilities within the right-of-way include: <ul style="list-style-type: none">2 x 20" HP, 9 MP gas crossings, 320 ft longitudinal MP1x 20" oil crossing1 telecom crossing6 storm crossings, 1 over 10' wide, 2 longitudinal (both under ¼ mile)Los Angeles River crossing12 sewer crossings12 water crossings Of these utilities, crossings in trench areas include: 6 MP gas, 2 storm (one over 10' wide), 6 sewer, and 3 water. The longitudinal conflicts (both storm and one gas) lie within the trench area. Storm and sewer crossings in trench areas may require siphons or pump stations.	Most of this segment is elevated. The aerial foundation pile caps will have a significant impact on utilities, potentially conflicting with up to 40% of them. Utilities within the right-of-way include: <ul style="list-style-type: none">7 MP gas crossings, 650 feet longitudinal MP1 oil crossing230 KV electrical – 2 crossings, 790 ft longitudinal1 telecom crossing12 storm crossings; 3 channels over 5' wideLos Angeles River crossing14 sewer crossings, 3 x 48" diam, ¼ mile longitudinal12 water crossings It has not yet been determined which of these storm and sewer crossings conflict with the foundation pile caps. These may require siphons or pump stations.
Disruption to Communities				
Displacements				
Residential Displacements	None	None	None	None
Business Displacement	17 – industrial parcels impacted 1 – non profit parcel impacted (Post Office Terminal Annex)	9 – industrial parcels impacted 1 – non profit parcel impacted (Post Office Terminal Annex)	16 – industrial parcels impacted 1 – non profit parcel impacted (Post Office Terminal Annex)	2 – commercial parcels impacted 36 – industrial parcels impacted 2 – non profit parcels impacted (Post Office Terminal Annex and Lincoln Heights Jail)
Properties with Access Affected	1- Industrial, 1 railway land	0	1 – railway land	1 – railway land
Local Traffic Effects near stations	See station evaluation (Los Angeles to Anaheim AA)	See station evaluation (Los Angeles to Anaheim AA)	See station evaluation (Los Angeles to Anaheim AA)	See station evaluation (Los Angeles to Anaheim AA)
Highway Grade Separations and Closures	1 grade separation (Main Street), 2 closures (local roads)	Temporary diversions on Broadway during construction, no others for elevated or at-grade LAUS	1 grade separation (Main Street), 2 closures (local roads), plus bridges over trench	None for elevated or at grade LAUS
Environmental Resources				
Biological Resources	The HST tunnel would be located below flood level of Los Angeles River, flooding risks would be avoided by flood-proofing techniques designed to protect ventilation and portal structures. There are no sensitive habitat areas within the LAUS area.	The HST tunnel would be located below flood level of Los Angeles River, flooding risks would be avoided by flood-proofing techniques designed to protect ventilation and portal structures. There are no sensitive habitat areas within the LAUS area.	The HST tunnel would be located below flood level of Los Angeles River, flooding risks would be avoided by flood-proofing techniques designed to protect ventilation and portal structures. There are no sensitive habitat areas within the LAUS area.	The HST Station and approaches would be at grade or elevated above the Los Angeles River floodplain. There are no sensitive habitat areas within the LAUS area.

LAUS to Metrolink CMF Subsection – Evaluation Matrix				
Measurement Criteria	Alternative LAPT1 Tunnel from At-Grade LAUS (Carried Forward)	Alternative LAPT2 Tunnel from At-Grade or Elevated LAUS (Not Carried Forward)	Alternative LAPT3 Tunnel from At-Grade or Elevated LAUS (Carried Forward)	Alternative LAP1C Viaduct from At- Grade or Elevated LAUS (Carried Forward)
Cultural Resources	<p>Previously Recorded Historical Resources</p> <ul style="list-style-type: none">1 properties adjacent to or near the alignment24 properties within the ½ mile zone <p>Previously Recorded Archeological Resources</p> <ul style="list-style-type: none">1 previously recorded site which would be displaced (in LASHP).25 previously recorded sites within the ½ mile zone	<p>Previously Recorded Historical Resources</p> <ul style="list-style-type: none">4 properties adjacent to or near the alignment26 properties within the ½ mile zone <p>Previously Recorded Archeological Resources</p> <ul style="list-style-type: none">3 previously recorded site adjacent to or near the alignment25 previously recorded sites within the ½ mile zone	<p>Previously Recorded Historical Resources</p> <ul style="list-style-type: none">1 properties adjacent to or near the alignment26 properties within the ½ mile zone <p>Previously Recorded Archeological Resources</p> <ul style="list-style-type: none">3 previously recorded site adjacent to or near the alignment <p>25 previously recorded sites within the ½ mile zone</p>	<p>The LAP1C alignment would be placed on a viaduct to avoid undermining historic, Spring Street, and Broadway bridges. The route would cross these historic-period properties on viaduct.</p> <p>Previously Recorded Historical Resources</p> <ul style="list-style-type: none">5 properties adjacent to or near the alignment31 properties within the ½ mile zone <p>Previously Recorded Archeological Resources</p> <ul style="list-style-type: none">2 previously recorded site adjacent to or near the alignment25 previously recorded sites within the ½ mile zone
Cultural Resources (cont'd)	<p>Common to all alternatives</p> <p>The proposed route has the potential to indirectly impact portions of historic-period properties as a result of noise and vibration from construction activities, and from operation of the high speed train, as well as changes to historic integrity aspects of feeling and setting.</p> <p>Impacts to previously recorded archaeological resources have the potential to occur as a result of direct impacts, such as removal or modification of the intact resource to accommodate the proposed track</p> <p>No impacts to human remains are anticipated.</p>			
Cultural Resources (cont'd)	<p>Common to all tunnel alternatives</p> <p>Impacts to buried archaeological resources have the potential to occur as a result tunneling or trenching.</p> <p>Impacts to paleontological resources have the potential to occur as a result of deep excavation to accommodate proposed tunnels along the project right-of-way. Deep excavation is likely to encounter the Monterey Formation, which is a fossil-bearing stratum.</p>			<p>Common to all viaduct alternatives</p> <p>Impacts to buried archaeological resources have the potential to occur as a result of construction of footings for elevated structures.</p>
Parklands	<p>Impacts from passing close to Los Angeles State Historic Park due to placement and construction of tunnel portals.</p> <p>2 parks and recreational uses adjacent to or intersecting the alignment.</p>	<p>Impacts from passing close to Los Angeles State Historic Park and Elysian Park due to placement and construction of tunnel portals.</p> <p>3 parks and recreational uses adjacent to or intersecting the alignment.</p>	<p>Impacts from passing close to Los Angeles State Historic Park due to placement and construction of tunnel portals.</p> <p>2 parks and recreational uses adjacent to or intersecting the alignment.</p>	<p>Likely direct impacts from passing close to Los Angeles Youth Athletic Club and Downey Recreation Center, and the future Albion Dairy River Park on viaduct. Likely indirect impacts (visual) to Los Angeles State Historic Park and Elysian Park. Likely impacts to bike trails along Los Angeles River.</p> <p>4 parks and recreational uses adjacent to or intersecting the alignment. Likely impacts from passing close to Los Angeles Youth Athletic Club on viaduct and Cypress Recreation Center at grade.</p>

LAUS to Metrolink CMF Subsection – Evaluation Matrix				
Measurement Criteria	Alternative LAPT1 Tunnel from At-Grade LAUS (Carried Forward)	Alternative LAPT2 Tunnel from At-Grade or Elevated LAUS (Not Carried Forward)	Alternative LAPT3 Tunnel from At-Grade or Elevated LAUS (Carried Forward)	Alternative LAP1C Viaduct from At- Grade or Elevated LAUS (Carried Forward)
Agricultural Lands	No impact to agricultural lands.	No impact to agricultural lands.	No impact to agricultural lands.	No impact to agricultural lands.
Natural Environment				
Noise and Vibration	This alternative would leave LAUS on viaduct then immediately transition into a trench before entering a tunnel portal near Main Street, then emerging near Rio De Los Angeles Park. Primary noise and vibration impacts would be to Los Angeles State Historic Park and nearby noise-sensitive land uses during construction activities, but lower impacts after completion. Due to the greatest extent of trench and tunnel sections, this alternative would result in the fewest number of potential operational noise and vibration impacts.	This alternative would leave LAUS on viaduct and continue on viaduct until entering a tunnel portal north of Alameda Street, then emerging near Rio De Los Angeles Park. This alternative would generally result in a greater number of potential operational noise and vibration impact than LAPT1 primarily within Los Angeles State Historic Park and nearby noise-sensitive land uses (due to the longer viaduct portion), but fewer impacts than LAP1C (which is entirely above ground).	This alternative would leave LAUS on viaduct then transition into a trench before entering a tunnel portal near Spring Street, then emerging near Rio De Los Angeles Park. Primary noise and vibration impacts would be to Los Angeles State Historic Park and nearby noise-sensitive land uses during construction activities, but lower impacts after completion.	This alternative, leaving LAUS on viaduct and continuing north on Main Street. This alignment would generate considerable noise impacts passing immediately north of the William Mead Housing Project and the Anne Street School on Main Street. It would then run at-grade or on elevated viaduct near several noise sensitive properties (homes, churches, parklands) on the east side of the Los Angeles River (south of SR-110) and along San Fernando Road (North of SR-110). This increased exposure to sensitive receivers would result in the highest number of potential operational noise and vibration impacts.
Change in Visual and Scenic Resources	This alternative would have a low impact compared to the other alternatives for the following reasons: <ul style="list-style-type: none">It goes into trench and then tunnel immediately after leaving LAUS	This alternative would have a high impact relative to LAPT1 for the following reasons: <ul style="list-style-type: none">A larger portion of the alignment is above ground than for Alternative LAPT1; therefore, the visual impact would be more significant.A larger portion of the alignment would pass through open space area on viaduct than LAP1C; therefore the impact to recreational users would be more significant.	This alternative would have a low impact compared to the other alternatives for the following reasons: <ul style="list-style-type: none">It goes into trench and then tunnel soon after leaving LAUS	The LAP1C alternative would have a high impact for the following reasons: <ul style="list-style-type: none">A larger portion of the alignment is above ground than for Alternative LAPT1; therefore, the visual impact would be more significant.This alternative reaches heights up to 60 feet on the viaduct as the alignment crosses over the Los Angeles River and reaches heights up to 70 feet as it crosses over three historically significant bridges – the Main Street Bridge, North Spring Bridge, and North Broadway Viaduct.The viaduct option reaches heights of up to 80 feet as it crosses over Young Nake Presbyterian Church, Downey Recreation Center, and a historic jail located along the east bank of the Los Angeles River south of the Pasadena Freeway.It is on a high viaduct in close proximity to multifamily dwelling units just north of LAUS.

LAUS to Metrolink CMF Subsection – Evaluation Matrix				
Measurement Criteria	Alternative LAPT1 Tunnel from At-Grade LAUS (Carried Forward)	Alternative LAPT2 Tunnel from At-Grade or Elevated LAUS (Not Carried Forward)	Alternative LAPT3 Tunnel from At-Grade or Elevated LAUS (Carried Forward)	Alternative LAP1C Viaduct from At- Grade or Elevated LAUS (Carried Forward)
Geological and Soil Constraints	Alternative is located outside of known fault rupture zones. 0.75 miles of the alternative's non-tunnel reaches are located within liquefaction hazard zone, with an additional 0.2 miles of cut and cover tunnel. Bored tunnel reaches are expected to be either in bedrock or below the liquefiable soil zone. 2.3 miles of the alternative are within a half-mile radius of city of Los Angeles Methane Zones. 0.75 miles are in the Hansen Dam Flood Inundation Zone.	Alternative is located outside known fault rupture zones. 1.3 miles of the alternative's non-tunnel reaches are located within liquefaction hazard zone. Tunnel reaches are expected to be either in bedrock or below the liquefiable soil zone. 2.4 miles of the alternative are within a half-mile radius of city of Los Angeles Methane Zones. 1.3 miles are in the Hansen Dam Flood Inundation Zone.	Alternative is located outside of known fault rupture zones. 1.2 miles of the alternative's non-tunnel or cut and cover tunnel reaches are located within liquefaction hazard zone. Bored tunnel reaches are expected to be either in bedrock or below the liquefiable soil zone. 2.4 miles of the alternative are within a half-mile radius of city of Los Angeles Methane Zones. 1 mile is in the Hansen Dam Flood Inundation Zone.	Alternative is located outside known fault rupture zones. 3.1 miles of the alternative are located within liquefaction hazard zone. 2.8 miles of the alternative are within a half-mile radius of city of Los Angeles Methane Zones. 2.7 miles are in the Hansen Dam Flood Inundation Zone.
Avoidance of Hazardous Materials	Increased risk of encountering hazardous materials due to substantially greater volume of soil excavation. Some risk of encountering aerially deposited lead and other metals in surface soil. Construction may encounter contaminated groundwater if it extends below grade. The area north of I-5 is located within the San Fernando Valley Superfund Area 3, which has groundwater contaminated by volatile organic compounds.	Increased risk of encountering hazardous materials due to substantially greater volume of soil excavation. Some risk of encountering aerially deposited lead and other metals in surface soil. Construction may encounter contaminated groundwater if it extends below grade. The area north of I-5 is located within the San Fernando Valley Superfund Area 3, which has groundwater contaminated by volatile organic compounds.	Increased risk of encountering hazardous materials due to substantially greater volume of soil excavation. Some risk of encountering aerially deposited lead and other metals in surface soil. Construction may encounter contaminated groundwater if it extends below grade. The area north of I-5 is located within the San Fernando Valley Superfund Area 3, which has groundwater contaminated by volatile organic compounds.	Moderate risk of encountering hazardous materials in excavating soil for pier foundations due to the numerous regulatory database sites in the vicinity. Some risk of encountering aerially deposited lead and other metals in soil. Demolition of existing structures may encounter asbestos, lead-paint, and other hazardous materials. Construction may encounter contaminated groundwater if it extends below grade. The area north of I-5 is located within the San Fernando Valley Superfund Area 3, which has groundwater contaminated by volatile organic compounds.
Agency and Public Input				
Agency and Public Input	The City of LA, Mayor's office, and Metro prefer this alignment and State Parks have no objection to the revised alignment which will not impact the archeological artifacts beneath the site.	This alignment is in conflict with the proposed construction of the Gold Line Yard and the associated Metro/Riboli Family/State Parks Midway yards development.	State Parks have no objection to the revised alignment. Potential conflict with the City of Los Angeles General Plan for the redevelopment between Spring Street, Main Street, Vignes and the Los Angeles River will need to be mitigated by coordination of HST proposals with their redevelopment plans.	This alignment would preserve the San Antonio Winery, but conflicts with the Downey Recreation Center, proposed park at the Dairy site, old city historic jail, and limits accessibility to the Los Angeles River from the east bank. The 60 foot viaduct will create visual impacts to all of the communities north of LAUS to I-5. Potential conflict with the City of Los Angeles General Plan for the redevelopment between Spring Street, Main Street, Vignes and the Los Angeles River

Table A-2 Metrolink CMF to SR 2 Subsection – Evaluation Matrix

Metrolink CMF to SR 2 Subsection – Evaluation Matrix				
Measurement Criteria	Metrolink Alignment Alternative At-Grade for LAP1C (Carried Forward)	Metrolink Alignment Alternative in Trench for all options (Not Carried Forward)	San Fernando Rd. Align. Alternative in Trench for all options (Not Carried Forward)	Tunnel Alternative beneath RDLASP for LAPT1, LAPT2, LAPT3 (Carried Forward)
Design Objectives				
Journey time	92 seconds (Speed limited to 60 mph)	92 seconds (60 mph)	55 seconds (140 mph)	55 seconds (140 mph)
	1.8 miles	1.8 miles	1.8 miles	1.8 miles
Intermodal Connections	No station in this part of the route	Similar to at-grade	Similar to at-grade	Similar to at-grade
Operating Costs	Lower	Greater because of pumping to drain trench	Greater because of pumping to drain trench	Slightly greater for because of longer tunnel
Capital Cost Factor	1.0	2.2 (LAP1C) 3.3 (LAPT1, LAPT2,LAPT3)	3.3	3.9
Land Use				
Transit Oriented Development (TOD) Potential	No station in this part of the route	Similar to at-grade	Similar to at-grade	Similar to at-grade
Consistency with Other Planning	This alternative matches the existing Metrolink/freight tracks horizontally and vertically. These tracks divide the Los Angeles River from the Rio De Los Angeles State Park (RDLASP). Mitigation of this barrier could be achieved by adding pedestrian underpasses beneath the tracks. This option would conflict with plans in the Los Angeles River Revitalization Master Plan to connect the park with the river, and efforts for river-edge improvements and restoration to native habitat, and the creation of passive (park) recreation, education, and cultural facilities. The at-grade option would also impact an under-construction high school campus located on the eastern side of the existing Metrolink alignment adjacent to the RDLASP.	Metrolink, and UPRR have stated that they cannot share a trench with HST for operational and safety reasons. This option would therefore increase the barrier between the Rio De Los Angeles State Park and the Los Angeles River since the different levels for the tracks would reduce the opportunities to make connections in future. This option would conflict with plans in the Los Angeles River Revitalization Master Plan to connect the park with the river, and efforts for river-edge improvements and restoration to native habitat, and the creation of passive (park) recreation, education, and cultural facilities. This alternative will result in temporary construction impacts to Taylor Yard related to trenching.	This alternative would require taking land from the edge of Rio De Los Angeles State Park and an under-construction high school site in order to create the trench. The trench portions would be partly covered for lengths up to 800 feet, maintaining connectivity by creating land bridges that would allow pedestrian and vehicular access to the RDLASP and so be compatible with Los Angeles River Revitalization Master Plan efforts, favor landscaping improvements, and allow for compatible uses such as parking. This alternative will result in temporary construction impacts to RDLASP and an under-construction high school site related to trenching. However, since this alternative would not impede connectivity to the Los Angeles River, it is consistent with the long term goals of the Los Angeles River Revitalization Master Plan and would allow access to planned river edge improvements.	By extending the tunnel, impacts on RDLASP and the school will be minimized. Since this alternative would not impede connectivity to the Los Angeles River, it is consistent with the long term goals of the Los Angeles River Revitalization Master Plan and would allow access to planned river edge improvements.
Constructability				
Constructability	This alternative will be the simplest to construct, but requires work alongside the operating railway.	Construction of a trench in Taylor Yard will be less complex than along San Fernando Road, but more complex than at grade construction.	This option will be the most complex to construct, with a deep trench created in a narrow strip of land beside San Fernando Road.	Extending the tunnel avoids the additional complexity of constructing the trench beside San Fernando Road.
Disruption to Existing Railroad	Metrolink/UPRR tracks relocated to allow HST to share right-of-way	Metrolink/UPRR tracks relocated to allow HST to share right-of-way.	Least disruption to Metrolink/UPRR tracks.	Least disruption to Metrolink/UPRR tracks.

Metrolink CMF to SR 2 Subsection – Evaluation Matrix				
Measurement Criteria	Metrolink Alignment Alternative At-Grade for LAP1C (Carried Forward)	Metrolink Alignment Alternative in Trench for all options (Not Carried Forward)	San Fernando Rd. Align. Alternative in Trench for all options (Not Carried Forward)	Tunnel Alternative beneath RDLASP for LAPT1, LAPT2, LAPT3 (Carried Forward)
Disruption to and Relocation of Utilities	Most of this segment is at grade, which has a minor impact on existing utilities; longitudinal conflicts will require relocation and crossings will require protection. Utilities within the right-of-way include: <ul style="list-style-type: none">1 HP, 2 MP gas crossings1 x 20" oil crossing, one ¼ mile longitudinal1 x 69 KV electrical crossing1 telecom crossing, one ¼ mile longitudinal7 storm crossings, 2 over 10' wide3 sewer crossings3 water crossings, one 70" diameter	Most of this segment is in trench, which has a major impact on existing utilities; both longitudinal conflicts and crossings. Storm and sewer crossings in trench areas may require siphons or pump stations. Utilities within the right-of-way include: <ul style="list-style-type: none">1 HP, 2 MP gas crossings1 x 20" oil crossing, one ¼ mile longitudinal1 x 69 KV electrical crossing1 telecom crossing, one ¼ mile longitudinal7 storm crossings, 2 over 10' wide3 sewer crossings3 water crossings, one 70" diameter	Most of this segment is in trench, which has a major impact on existing utilities; both longitudinal conflicts and crossings. Storm and sewer crossings in trench areas may require siphons or pump stations. Utilities within the right-of-way include: <ul style="list-style-type: none">1 HP, 3 MP, 3 LP gas crossings, 2 longitudinal conflicts1 x 20" oil crossing69 KV electrical - 2/3 mile longitudinal1 telecom crossing8 storm crossings, 3 over 10' wide5 sewer crossings, one 48" diameter, 1 longitudinal3 water crossings, one 70" diameterShaft for NEIS sewer is close to this alignment	Most of this segment is in tunnel, thereby minimizing impact on utilities, except in trench segments transitioning to tunnel. Utilities within the right-of-way include: <ul style="list-style-type: none">1 HP, 2 MP gas crossings1 x 20" oil crossing, one ¼ mile longitudinal1 x 69 KV electrical crossing1 telecom crossing, one ¼ mile longitudinal7 storm crossings, 2 over 10' wide3 sewer crossings3 water crossings, one 70" diameter Of these utilities, crossings in trench areas include: 1 gas, 2 storm including one 10' wide, and 2 sewer. Storm and sewer crossings in trench areas may require siphons or pump stations.
Disruption to Communities				
Displacements				
Residential Displacements	Planned housing development south of the Park would be affected.	Planned housing development south of the Park would be affected.	Planned housing development south of the Park would be affected.	Planned housing development south of the Park would not be directly affected, but easements for tunnel construction beneath it would be needed.
Business Displacements	2– commercial parcels impacted 9 – industrial parcels impacted	2 – commercial parcels impacted 9 – industrial parcels impacted	5 – commercial parcels impacted 8 – industrial parcels impacted	2 – commercial parcels impacted 7 – industrial parcels impacted
Properties with Access Affected	0	0	1 - industrial	0
Local Traffic Effects near stations	No station in this part of the route	Similar to at-grade	Similar to at-grade	Similar to at-grade
Highway Grade Separations and Closures	None	None	One closure (access road to displaced industrial sites). Bridges over trench give access to park and high school.	One closure (access road to displaced industrial sites).
Environmental Resources				
Biological Resources	No known biologically sensitive habitats affected.	Similar to at-grade	No known impacts (park, which is affected, has been recently constructed)	No known biologically sensitive habitats affected.
Cultural Resources	Impacts to previously recorded archaeological resources have the potential to occur as a result of direct impacts, such as removal or modification of the intact resource to accommodate the proposed track or footings.	Impacts to previously recorded archaeological resources have the potential to occur as a result of direct impacts, such as removal or modification of the intact resource to accommodate the proposed track or footings or the trench. Impacts to paleontological resources have the potential to occur as a result of deep excavation to accommodate proposed trenching along the project right-of-way. Deep excavation is likely to encounter the Monterey Formation, which is a fossil-bearing stratum.	Impacts to previously recorded archaeological resources have the potential to occur as a result of direct impacts, such as removal or modification of the intact resource to accommodate the proposed track or footings or the trench. Impacts to paleontological resources have the potential to occur as a result of deep excavation to accommodate proposed trenching along the project right-of-way. Deep excavation is likely to encounter the Monterey Formation, which is a fossil-bearing stratum.	Impacts to previously recorded archaeological resources have the potential to occur as a result of direct impacts, such as removal or modification of the intact resource to accommodate the proposed track or footings or the trench. Impacts to paleontological resources have the potential to occur as a result of deep excavation to accommodate proposed trenching along the project right-of-way. Deep excavation is likely to encounter the Monterey Formation, which is a fossil-bearing stratum.
Parklands	Indirect impact to the adjoining Rio de Los Angeles State Park but no direct impact. The at-grade option will inhibit connectivity with the Los Angeles River which would need to be provided by underpasses or bridging over tracks. Impact on the proposed park on the 'bow-tie' site.	Indirect impact to the adjoining Rio de Los Angeles State Park but no direct impact. The combination of an HST trench with Metrolink at-grade tracks will further inhibit connectivity with the Los Angeles River. Impact on the proposed park on the 'bow-tie' site.	2.5 acres taken from the adjoining Rio de Los Angeles State Park, mitigated by partially covering the trench	No impact to Parklands

Metrolink CMF to SR 2 Subsection – Evaluation Matrix				
Measurement Criteria	Metrolink Alignment Alternative At-Grade for LAP1C (Carried Forward)	Metrolink Alignment Alternative in Trench for all options (Not Carried Forward)	San Fernando Rd. Align. Alternative in Trench for all options (Not Carried Forward)	Tunnel Alternative beneath RDLASP for LAPT1, LAPT2, LAPT3 (Carried Forward)
Agricultural Lands	No impact to agricultural lands.	No impact to agricultural lands.	No impact to agricultural lands.	No impact to agricultural lands.
Natural Environment				
Noise and Vibration	This Alternative, running entirely at grade along the existing Metrolink corridor would generally result in the greatest number of potential operational noise and vibration impacts, especially at the Rio De Los Angeles State Park, and adjacent high school site. Mitigation of these impacts would also be likely to mitigate the noise from the Metrolink/freight tracks.	This Alternative, running entirely in a trench along the existing Metrolink corridor with several portions covered would generally result in fewer number of potential operational noise and vibration impacts, especially at the Rio De Los Angeles Park, and the high school site, but noise from the existing Metrolink/freight tracks would not be mitigated.	This Alternative, running entirely in a trench along San Fernando Road with several portions covered would generally result in a moderate number of potential operational noise and vibration impacts relative to other alternatives, due to its proximity to both the Rio De Los Angeles Park, and the high school site as well as to sensitive receivers east of San Fernando Road.	This Alternative, running in tunnel past the RDLASP and school, will have the least operational noise and vibration effects.
Change in Visual and Scenic Resources	During construction activities, this alternative would have a relatively lower visual impact compared to the other two alternatives because the construction period would be shorter and would require less use of heavy equipment than the “in trench” alternatives. However, during the operation of the rail line, this alternative would have a relatively higher visual impact than the other alternatives because it would be visible to recreational users within the Rio de Los Angeles state park area, and to occupants of and visitors to the high school.	During construction activities, the two “in-trench” alternatives would have a relatively higher visual impact compared to the other (at-grade) alternative because the construction period would be longer and would require the use of more heavy equipment with the in-trench alternatives than with an at-grade alternative. However, during the operation of the rail line, the in-trench alternatives would have a relatively lower visual impact than the at-grade alternative because the rail line would not be visible to recreational users within the Rio de Los Angeles state park area or to occupants of and visitors to the high school (as it would be with the at-grade alternative). During operation of the rail line, the two in-trench alternatives would have equal impact, from a visual standpoint, since neither would be visible to individuals passing through, or working, or residing in the area, and recreational users.	During construction activities, the two “in-trench” alternatives would have a relatively higher visual impact compared to the other (at-grade) alternative because the construction period would be longer and would require the use of more heavy equipment with the in-trench alternatives than with an at-grade alternative. However, during the operation of the rail line, the in-trench alternatives would have a relatively lower visual impact than the at-grade alternative because the rail line would not be visible to recreational users within the Rio de Los Angeles state park area or to occupants of and visitors to the high school (as it would be with the at-grade alternative). During operation of the rail line, the two in-trench alternatives would have equal impact, from a visual standpoint, since neither would be visible to individuals passing through, or working, or residing in the area, and recreational users.	This option would have the least visual impact.
Geological and Soil Constraints	Located outside known fault rupture zones. 1.5 miles of the alternative are located within a liquefaction hazard zone. 1.6 miles of the alternative are in the Hansen Dam and Eagle Rock Dam Flood Inundation Zones.	Located outside known fault rupture zones. 1.5 miles of the alternative are located within a liquefaction hazard zone. 1.6 miles of the alternative are in the Hansen Dam and Eagle Rock Dam Flood Inundation Zones.	Located outside known fault rupture zones. 1.5 miles of the alternative are located within a liquefaction hazard zone. 1.5 miles of the alternative are in the Hansen Dam and Eagle Rock Dam Flood Inundation Zones.	Located outside known fault rupture zones. 1.5 miles of the alternative are located within a liquefaction hazard zone. 1.5 miles of the alternative are in the Hansen Dam and Eagle Rock Dam Flood Inundation Zones.
Avoidance of Hazardous Materials	Metrolink’s Taylor Yard is located adjacent to the west of the alignment and is listed in numerous regulatory databases. Routine maintenance and major diesel locomotive service and repair have been conducted at this site for nearly 100 years. Contaminants of concern in soil and groundwater are principally oil, grease, diesel, solvents, and metals. There is some risk of encountering aerially deposited lead and other metals in soil. Demolition of existing structures may encounter asbestos, lead-paint, and other hazardous materials.	Metrolink’s Taylor Yard is located adjacent to the west of the alignment and is listed in numerous regulatory databases. Routine maintenance and major diesel locomotive service and repair have been conducted at this site for nearly 100 years. Contaminants of concern in soil and groundwater are principally oil, grease, diesel, solvents, and metals. Construction may encounter contaminated groundwater if it extends below grade. The alignment is located within the San Fernando Valley Superfund Area 3, which has groundwater contaminated by volatile organic compounds. There is some risk of encountering aerially deposited lead and other metals in soil. Demolition of existing structures may encounter asbestos, lead-paint, and other hazardous materials.	Some risk of encountering hazardous materials in soil from numerous listed hazardous materials release sites adjacent to the east of the alignment. Construction may encounter contaminated groundwater if it extends below grade. The alignment is located within the San Fernando Valley Superfund Area 3, which has groundwater contaminated by volatile organic compounds. There is some risk of encountering aerially deposited lead and other metals in soil. Demolition of existing structures may encounter asbestos, lead-paint, and other hazardous materials.	Some risk of encountering hazardous materials in soil from numerous listed hazardous materials release sites adjacent to the east of the alignment. Construction may encounter contaminated groundwater if it extends below grade. The alignment is located within the San Fernando Valley Superfund Area 3, which has groundwater contaminated by volatile organic compounds. There is some risk of encountering aerially deposited lead and other metals in soil. Demolition of existing structures may encounter asbestos, lead-paint, and other hazardous materials.

Metrolink CMF to SR 2 Subsection – Evaluation Matrix				
Measurement Criteria	Metrolink Alignment Alternative At-Grade for LAP1C (Carried Forward)	Metrolink Alignment Alternative in Trench for all options (Not Carried Forward)	San Fernando Rd. Align. Alternative in Trench for all options (Not Carried Forward)	Tunnel Alternative beneath RDLASP for LAPT1, LAPT2, LAPT3 (Carried Forward)
Agency and Public Input				
Agency and Public Input	FOLAR, Councilmember Reyes’ office, Metro and other downtown Los Angeles stakeholders including Mt. Washington Homeowners Alliance, Glassell Park Neighborhood Council, Greater Cypress Park Neighborhood Council and Lincoln Heights Neighborhood Council do not favor this alignment as it will only provide pedestrian access to the Los Angeles River via a pedestrian bridge or tunnel under the rail line. This alignment does not impact any of LAUSD’s policies pertaining to the new school site.	The City of Los Angeles prefers this alignment to the San Fernando Road alignment because it does not encroach on Rio de Los Angeles Park. Metrolink and UPRR have stated that they would not be able to share a trench with HSR, and so this alternative will not give level access to the Los Angeles River. Pedestrian access to the Los Angeles River could only be via a pedestrian bridge over the Metrolink tracks.	The direct impact to Rio de Los Angeles State Park during construction, and the permanent reduction in area of the park, is not acceptable to State Parks. If this alignment also relocated Metrolink/freight into a shared trench along San Fernando Road between the park and Los Angeles River it would provide for better connectivity than either of the other alignments. However, since Metrolink have stated that this would not be possible, the perceived benefit to long-term plans for river revitalization will not be realized by this alternative. LAUSD did not prefer this alignment because it will disrupt their playing fields during construction.	The City of Los Angeles prefers this alignment because it does not encroach on Rio de Los Angeles Park. FOLAR prefers this alignment because it doesn’t impact long-term plans for river revitalization. LAUSD prefers this alignment because it will not disrupt their playing fields during construction.

Table A-3 SR2 to Sylmar Subsection Stations – Evaluation Matrix

SR 2 to Sylmar Subsection Stations – Evaluation Matrix					
Evaluation Measure	Alternative BVS Buena Vista Station Location (Carried Forward)	Alternative BSS Branford Street Station Location (Carried Forward)	Alternative PWS Pacoima Wash Station Location (Not Carried Forward)	Alternative SFS San Fernando Station Location (Carried Forward)	Alternative BMS Burbank Metrolink Station Location (Not Carried Forward)
Design Objectives					
Journey Time	Included within alignment data	Similar to BVS	Similar to BVS	Similar to BVS	Increased journey time for non-stop trains and operational constraints from non standard station loops
Intermodal Connections	Best linkage with Bob Hope Airport and its planned transit center (1 mile away). Within half a mile of I-5 freeway, reached along Hollywood Way or North Buena Vista Blvd. Co-located Metrolink stop would be 3 miles from existing Downtown Burbank Metrolink Station. Currently Metro bus routes 94, 169, 222, and 794 as well as Burbank Bus's Empire to Downtown Shuttle pass within 1000 feet of the station site. Metro route 292 passes within 1500 feet. Some of these routes would be adjusted and new routes introduced to serve the HST station.	One mile from I-5, with a partial interchange at Branford St., and a full interchanges at Osborne St and Laurel Canyon Blvd/Sheldon St. Within a half mile of Whiteman Airport. Potential for co-locating one of two Metrolink stations within 4 miles. Currently Metro bus routes 224 and 794 pass by the station site. In addition, Metro routes 166 and 364 traverses the HST alignment within 1000 feet of the station site. Some of these routes would be adjusted and new routes introduced to serve the HST station.	In close proximity to SR 118, with a full interchange along San Fernando Road that also leads to I-5 and I-210. Currently Metro bus routes 224 and 794 pass by the station site. In addition, Metro route 168 traverses the HST alignment within 1000 feet of the station site. Some of these routes would be adjusted and new routes introduced to serve the HST station.	Over one mile from SR 118 along San Fernando Road, within 1 mile of I-5 along Brand Boulevard. Currently Metro bus routes 94, 224, 230, 239, 724, and 734 as well as LADOT bus route 574 pass by the station site. In addition, Route 234 traverses the HST alignment within 1000 feet of the station site. Some of these routes would be adjusted and new routes introduced to serve the HST station.	Good linkage with Metrolink, at the existing Metrolink station and giving access to the Ventura line. Currently Burbank Bus operates the Metrolink to Media District Shuttle (MM), Downtown Burbank Loop (DL), and the Empire to Downtown Shuttle (ED) to the station. Metro bus 92, 96, 154, 155, 164, 165, 292, 794 operate to the station. Other bus service connections include Glendale Bee Line 12 and Santa Clarita Transit 794. Some of these routes would be adjusted and new routes introduced to serve the HST station.
Operating Costs	Lower	Lower	Higher if station is elevated (60 feet up)	Lower	Lower
Capital Cost Factor	1.0	1.1	3.0	1.1	1.8
Land Use					
Transit Oriented Development (TOD) Potential	The proposed station platform location is within the City of Burbank. The platform location lies within Burbank's Golden State Redevelopment Plan Area. The planned land uses within a quarter mile are Industrial, Residential, and Public. Though there is significant airport industrial land uses currently, there is potential to create a substantial mixed-use TOD Planning area, that takes advantage of the large land area that can be assembled proximate to the station.	The proposed station lies within the City of Los Angeles – Arleta/Pacoima Community Plan Area. The majority of the area immediately surrounding the proposed station location is currently industrial land, both developed and open space (water recharge ponds). The city Redevelopment Agency has identified this area for redevelopment, and, as such, could enhance TOD opportunity if sufficient acreage can be assembled. There is the potential to assemble a significant site that could be redeveloped as a TOD opportunity, by using tunnel excavation spoil to partially fill the quarry.	The proposed station lies within the City of Los Angeles – Arleta/Pacoima Community Plan Area. The planned land uses within a quarter mile are industrial, public, and residential. If elevated, the station platform height could be detrimental to any station area development opportunities, given the disconnect from ground level land uses and development. However, the City has identified this area for redevelopment and this could enhance the potential for TOD opportunities.	The proposed station lies within the City of San Fernando, Corridors Specific Plan and Redevelopment Project Area #1. The planned land uses within a quarter mile are commercial, multi-use, public, industrial, and residential. The presence of commercial and public uses appears to have a high potential for TOD, however, since most of the area immediately adjacent to the station area is developed as low density residential, it may be challenging to create a significant parcel to support an ambitious TOD opportunity.	The proposed station lies within the City of Burbank Redevelopment Plan's South San Fernando project area which consists of a large number of industrial facilities and the Burbank Water and Power Plant. The power plant restricts the opportunities for TOD directly adjacent to the station. TOD opportunities in existing down town Burbank would be separated from the station by the I-5 freeway, though access between could be achieved by construction of pedestrian / bike bridges.

SR 2 to Sylmar Subsection Stations – Evaluation Matrix					
Evaluation Measure	Alternative BVS Buena Vista Station Location (Carried Forward)	Alternative BSS Branford Street Station Location (Carried Forward)	Alternative PWS Pacoima Wash Station Location (Not Carried Forward)	Alternative SFS San Fernando Station Location (Carried Forward)	Alternative BMS Burbank Metrolink Station Location (Not Carried Forward)
Consistency with Other Planning	Overall, the potential station platform location is consistent with local planning efforts and adopted plans. The Golden State Redevelopment Plan objectives, policies and goals emphasize integration and enhancement of multi-modal transportation systems.	Overall, the potential station platform location is consistent with local planning efforts and adopted plans. The City of Los Angeles – Arleta/Pacoima Community Plan Area objectives, policies, and goals emphasize integration and enhancement of multi-modal transportation systems.	Overall, the potential station is consistent with local planning efforts and adopted plans. The City of Los Angeles – Arleta/Pacoima Community Plan Area, Tujunga /Pacoima Watershed Plan objectives, policies, and goals emphasize integration and enhancement of multi-modal transportation systems.	Overall, the potential station is consistent with some of the objectives of the San Fernando General Plan (GP) (attract new commercial activities, promote economic vitality), while inconsistent with others (retain the small town character, conserve single family neighborhoods).	<p>The potential station is consistent with the objectives of Burbank’s South San Fernando Redevelopment Plan (removing obsolete and substandard buildings and encouraging transit supportive mixed developments) and City Centre project area(encourage mixed-use development, promote increased density and reduced vehicle trips to maximize job creation, and well designed pedestrian access).</p> <p>The station is also consistent with the policies and objectives of the Burbank General Plan (provide access to public transit from regional centers, promote transit use for people who live near transit centers by increased residential densities, and transit oriented development near transit centers, pursue transportation and land use alternatives to improve Burbank’s access to local and regional destinations).</p>
Constructability					
Constructability	Expected to be most straightforward to construct.	Expected to be more difficult to construct because of the need for a grade separation.	Expected to be most difficult to construct because station is either on high viaduct and this viaduct needs to cross over the SR 118 freeway, or a length of the SR 118 freeway would need to be reconstructed.	Expected to be more difficult to construct because of the need for a grade separation	Expected to be more difficult to construct because of the need to reconstruct existing road bridges
Disruption to existing railroads	Included within alignment data	Similar to BVS	Similar to BVS	Similar to BVS	Greater disruption because of the need to reconstruct existing road bridges and relocation required close to Burbank Junction and the Empire Avenue grade separation
Disruption to and relocation of utilities	Included within alignment data	Similar to BVS	Similar to BVS	Similar to BVS	Similar to BVS
Disruption to Communities					
Displacements					
Residential Displacements	None	None	A number of residential parcels would be impacted by temporary diversion of SR 118 during construction of the at-grade option	16 parcels impacted (4.1 acres)	None

SR 2 to Sylmar Subsection Stations – Evaluation Matrix					
Evaluation Measure	Alternative BVS Buena Vista Station Location (Carried Forward)	Alternative BSS Branford Street Station Location (Carried Forward)	Alternative PWS Pacoima Wash Station Location (Not Carried Forward)	Alternative SFS San Fernando Station Location (Carried Forward)	Alternative BMS Burbank Metrolink Station Location (Not Carried Forward)
Business Displacement (in excess of No Station)	8 – commercial parcels impacted (6.8 acres) 22 – industrial parcels impacted (15.7 acres)	9 – industrial parcels impacted (18.2 acres)	17 – industrial parcels impacted (23.9 acres) 1 – school parcel impacted (0.1 acres). Land take on the western boundary of San Fernando Middle School property is marginally greater for this station alternative.	17 – commercial parcels impacted (7.7 acres) 4 – industrial parcels impacted (13.4 acres) -2 – schools parcels impacted (-0.7 acres). Land take on the western boundaries of San Fernando Middle School and Kinder Care Learning Center are lower for this station alternative. Note: the No Station alignment has a marginal impact on a number of small parcels to the east of the alignment. The station alignment has no impact on the east side but a major impact on a smaller number of large parcels on the west of the alignment; hence the excess number of parcels affected by the station is negative.	30 – commercial parcels impacted (7.3 acres) 50 – industrial parcels impacted (15.3 acres)
Properties with Access Affected	0	0	0	0	0
Local Traffic Effects	<p>All five station sites are projected to generate comparable boarding levels, with similar overall increases in traffic. Differences in effect on local traffic relate primarily on the areas roadway network's completeness and capacity. Local traffic impacts will be studied in detail in the EIR/EIS.</p> <p>Arterials, including San Fernando Road and N. San Fernando Road, Cohasset Street, Glenoaks Blvd., N. Ontario Street, Buena Vista Street and Hollywood Way, would be affected by increased traffic generated by the station.</p> <p>Hollywood Way would be expected to see an increase in traffic between the station and Bob Hope Airport.</p> <p>The area around the airport currently experiences high levels of traffic congestion. It can be anticipated that the location of the HST station proximate to the airport will increase congestion levels. This impact is likely to be most pronounced on surface streets in the vicinity of the airport, and less pronounced on the I-5 and SR 134 freeways.</p>	<p>All five station sites are projected to generate comparable boarding levels, with similar overall increases in traffic. Differences in effect on local traffic relate primarily on the areas roadway network's completeness and capacity. Local traffic impacts will be studied in detail in the EIR/EIS.</p> <p>The limited network of existing arterial streets would result in traffic increases that will likely be most pronounced on San Fernando Road. Other local roadways that are likely to be affected include Branford Street, Montague Street, Osborne Street, Laurel Canyon Blvd. and Glenoaks Blvd. The impacts on I-5, and its partial interchange at Branford St. and full interchange at Osborne St. will be affected, though the relative impacts will be less pronounced given current high traffic volumes.</p>	<p>All five station sites are projected to generate comparable boarding levels, with similar overall increases in traffic. Differences in effect on local traffic relate primarily on the areas roadway network's completeness and capacity. Local traffic impacts will be studied in detail in the EIR/EIS.</p> <p>As the primary means of access to the station location SR 118 and San Fernando Road, would experience the most significant traffic increases. Impacts are likely to be more pronounced on San Fernando Road; less so on SR 118. The limited arterial network proximate to the station location would result in concentrated traffic increases east-west on Paxton Street and Vaughn Street, and north-south on Laurel Canyon Blvd., Bradley Avenue, Herrick Avenue, and Glenoaks Blvd.</p>	<p>All five station sites are projected to generate comparable boarding levels, with similar overall increases in traffic. Differences in effect on local traffic relate primarily on the areas roadway network's completeness and capacity. Local traffic impacts will be studied in detail in the EIR/EIS.</p> <p>SR 118 and San Fernando Road, as important access routes to the station location would experience traffic increases. Traffic impacts are likely to most pronounced along San Fernando Road since this arterial street would be the primary point of access to the station location. Traffic increases would also be experienced at the I-5 interchanges at Brand Blvd. and San Fernando Mission Blvd. though are likely to be relatively modest given current traffic volumes. Other arterials expected to experience increase demand include Truman Street, Maclay Street, Laurel Canyon Blvd., 4th Street, 5th Street and Glenoaks Blvd.</p>	<p>All five station sites are projected to generate comparable boarding levels, with similar overall increases in traffic. Differences in effect on local traffic relate primarily on the areas roadway network's completeness and capacity. Local traffic impacts will be studied in detail in the EIR/EIS.</p> <p>Burbank Blvd between I-5 Southbound and I-5 Northbound ramps, and San Fernando Blvd north of Burbank Blvd, are currently operating at or beyond capacity (LOS E or F) under existing conditions.</p> <p>Based on the future with project conditions analysis (five parking areas totaling 7,000 spaces in close proximity to the station) it is assumed that four roadway segments will operate at or beyond capacity including:</p> <ul style="list-style-type: none">• Magnolia Blvd east of Victory Blvd• Burbank Blvd east of Victory Blvd• Burbank Blvd between I-5 Southbound and I-5 Northbound ramps <p>San Fernando Blvd north of Burbank Blvd</p> <p>In most cases widening is not seen as a viable potential mitigation measure based on the built-out nature surrounding area and current city policies.</p>

SR 2 to Sylmar Subsection Stations – Evaluation Matrix					
Evaluation Measure	Alternative BVS Buena Vista Station Location (Carried Forward)	Alternative BSS Branford Street Station Location (Carried Forward)	Alternative PWS Pacoima Wash Station Location (Not Carried Forward)	Alternative SFS San Fernando Station Location (Carried Forward)	Alternative BMS Burbank Metrolink Station Location (Not Carried Forward)
Environmental Resources					
Biological Resources	No known biologically sensitive habitats affected.	The Branford Street station may affect potential special aquatic resources areas that may exist in the quarry or ponds.	No known biologically sensitive habitats affected.	No known biologically sensitive habitats affected.	No known biologically sensitive habitats affected.
Cultural Resources	The CHRIS records search (June 2009) did not identify previously recorded cultural resources within a half-mile search radius of this station. Therefore, no previously recorded cultural resources are anticipated to be adversely affected by station construction.	The CHRIS records search (June 2009) did not identify previously recorded cultural resources within a half-mile search radius of this station. Therefore, no previously recorded cultural resources are anticipated to be adversely affected by station construction.	The CHRIS records search (June 2009) identified three properties within a half-mile search radius of the station that were previously assigned NRHP Status Code 2S2 (NRHP-Eligible, CRHR-listed). These cultural resources are located outside of the area of direct impact for the station construction, and therefore are not anticipated to be adversely affected by the project.	The CHRIS records search (June 2009) identified one NRHP-listed property within the half-mile search radius: (Lopez Adobe – NR-71000157/19-186580). In addition, the CHRIS records search (June 2009) identified six properties previously assigned NRHP Status Code 2S2 (NRHP-Eligible, CRHR-listed) within the half-mile search radius. Three properties were not evaluated for NRHP eligibility, and one property was previously assigned NRHP Status Code 5S2 (Local Register-eligible) within the half-mile search radius, per the CHRIS records search (June 2009). These cultural resources are located outside of the area of direct impact for the station construction, and therefore are not anticipated to be adversely affected by the project.	The CHRIS records search (June 2009) did not identify previously recorded cultural resources within a half-mile search radius of this station. Therefore, no previously recorded cultural resources are anticipated to be adversely affected by station construction.
Parklands	May impact trail system along San Fernando Road.	May impact trail system along San Fernando Road.	May impact trail system along San Fernando Road.	May impact trail system along San Fernando Road.	May impact trail system along San Fernando Road.
Agricultural Lands	No agricultural lands within or adjacent to station footprint.	No agricultural lands within or adjacent to station footprint.	No agricultural lands within or adjacent to station footprint.	No agricultural lands within or adjacent to station footprint.	No agricultural lands within or adjacent to station footprint.
Natural Environment					
Noise and Vibration	This station alternative is just north of San Fernando Road near the Burbank airport and also within 200 feet of several blocks of existing residential structures just north of San Fernando Road. The noise impacts due to this alternative are likely moderate.	This station alternative is centered in an undeveloped area approximately 2000 feet from residential developments to the west and south. The opportunity for noise impacts is low to moderate.	This station alternative is located in the middle of an existing industrial area with established residential neighborhoods to the south-east and north-east. If elevated, the opportunity for noise impacts is moderate because the high viaducts extend past these residential areas.	This station alternative is situated in the midst of the San Fernando civic area and is within several hundred feet of San Fernando Middle School, multi family dwelling units, a police station and court building, representing a moderate noise impact scenario.	This station alternative is the same location as the existing Downtown Burbank Metrolink Station, located between Olive Avenue and Magnolia Boulevard, and between I-5 and Burbank Water and Power Plant. The nearest residential development is approximately 800 feet from this station and I-5 is between this residential development and the proposed station. Due to the higher ambient noise level at the residence, the noise impact is expected to be low.

SR 2 to Sylmar Subsection Stations – Evaluation Matrix					
Evaluation Measure	Alternative BVS Buena Vista Station Location (Carried Forward)	Alternative BSS Branford Street Station Location (Carried Forward)	Alternative PWS Pacoima Wash Station Location (Not Carried Forward)	Alternative SFS San Fernando Station Location (Carried Forward)	Alternative BMS Burbank Metrolink Station Location (Not Carried Forward)
Change in Visual and Scenic Resources	This station alternative is on low embankment and located in close proximity to sensitive receptor locations such as residential uses and would have a potential moderate impact.	This station alternative is on low embankment and located in close proximity to sensitive receptor locations such as designated open space uses and would have a potential moderate impact.	If this station alternative is elevated and located in close proximity to sensitive receptor locations such as public facilities, residential uses, and open space, it would have a potential high impact.	This station alternative is on low embankment and located in close proximity to sensitive receptor locations such as public facilities and residential uses, and would have a potential moderate impact.	This station alternative is surrounded by industrial and commercial uses. The nearest residential neighborhood is close to one-half mile away, as is the nearest recreational area. No open space areas are located within a one-mile radius of the station. The existing Metrolink station is located adjacent to the proposed station. Based on these factors, the potential impact would be low.
Geological and Soil Constraints	The site is located outside known fault rupture and liquefaction hazard zones. In Hansen Dam Flood Inundation Zone.	The site is located inside the fault-rupture hazard zone for the Verdugo Fault, as determined for this project. The Verdugo fault is considered capable of fault rupture, but with a low probability of rupture within the design life of the system. The Verdugo fault does not have a defined Alquist-Priolo earthquake fault zone. The site is located outside known liquefaction hazard zones. The northern end of the station footprint is located within the city of Los Angeles Methane Zone. In Pacoima and Hansen Dam Flood Inundation Zones.	The site is located inside the fault-rupture hazard zone for the Verdugo Fault, as determined for this project. The Verdugo fault is considered capable of fault rupture, but with a low probability of rupture within the design life of the system. The Verdugo fault does not have a defined Alquist-Priolo earthquake fault zone. A high viaduct is not acceptable in the fault rupture zone. The site is located outside known liquefaction hazard zones. In city of Los Angeles Methane Zone and Pacoima Dam Flood Inundation Zone.	The northern end of the station footprint is located within the Alquist-Priolo earthquake fault zone for the San Fernando fault. The fault is active and will be subject to further study. Ground rupture is possible and weaker bearing soils may also be present. The northern end of the station footprint is located within a liquefaction hazard zone. In Pacoima Dam Flood Inundation Zone.	The site is located outside of known fault-rupture zones. The entire station footprint is located within a liquefaction hazard zone. The northern end of the station footprint is located within the Hansen Dam Flood Inundation Zone.
Avoidance of Hazardous Materials	Construction may encounter contaminated groundwater if it extends 30 feet below ground level. The station is located within the San Fernando Valley Superfund Area 1, which has groundwater contaminated by volatile organic compounds. Some risk of encountering aurally deposited lead and other metals in soil. Demolition of existing structures may encounter asbestos, lead-paint, and other hazardous materials	Construction may encounter contaminated groundwater if it extends 30 feet below ground level. The station is located within the San Fernando Valley Superfund Area 1, which has groundwater contaminated by volatile organic compounds. Also, located within the former Branford Landfill which has reported methane issues. Some risk of encountering aurally deposited lead and other metals in soil. Demolition of existing structures may encounter asbestos, lead-paint, and other hazardous materials.	Some risk of encountering hazardous materials in soil or groundwater from a nearby former metal parts manufacturer listed as a hazardous materials release site. Some risk of encountering aurally deposited lead and other metals in soil. Demolition of existing structures may encounter asbestos, lead-paint, and other hazardous materials	It is expected that no hazardous materials will be encountered in the soil and/or groundwater. Some risk of encountering aurally deposited lead and other metals in soil. Demolition of existing structures may encounter asbestos, lead-paint, and other hazardous materials.	Construction may encounter contaminated groundwater if it extends 30 feet below ground level. The station is located within the San Fernando Valley Superfund Area 2, which has groundwater contaminated by volatile organic compounds. The existing Metrolink Station is an active Corrective Action site as of 2008. Reportedly, a Corrective Measures Study Report is due to the DTSC in April 2011. Potential media affected is reported as indoor air, groundwater, soil, surface water, and soil vapor. Some risk of encountering aurally deposited lead and other metals in soil. Demolition of existing structures may encounter asbestos, lead-paint, and other hazardous materials

SR 2 to Sylmar Subsection Stations – Evaluation Matrix					
Evaluation Measure	Alternative BVS Buena Vista Station Location (Carried Forward)	Alternative BSS Branford Street Station Location (Carried Forward)	Alternative PWS Pacoima Wash Station Location (Not Carried Forward)	Alternative SFS San Fernando Station Location (Carried Forward)	Alternative BMS Burbank Metrolink Station Location (Not Carried Forward)
Agency and Public Input					
Agency and Public Input	Metro, the City of Burbank and the Bob Hope Airport Authority requested a study of a possible station option near the airport. The city does not want an HST station to disrupt their community via right-of-way encroachment into neighborhoods nor do they want the downtown Metrolink station moved. The city stated that the HST station should minimize cut-through traffic between SR 134 and I-5. All the above parties are supportive of the proposed station at the Burbank Airport. There is support in the San Fernando Valley for a one station concept providing it has good intermodal connectivity for public transit and road access.	The Mayor’s office, Metro, Councilmember Alarcon, and the City of Los Angeles prefer a station option in the City of LA. The Mayor’s office has expressed concern over a Branford location as there is a planned and funded “live/work” development, creating 400 jobs, in the vicinity of the proposed station site. CHSTP has held an initial meeting with the Mayor’s office and developer to review the development possibilities that may be available at this site, and how they may co-locate with a HST station. There is concern about access and local intermodal connectivity to the station option. There is support in the San Fernando Valley for a one station concept providing it has good intermodal connectivity for public transit and road access.	The City of Los Angeles valley planners and the Mayor’s office were in favor of this option because it is a CRA enterprise zone and has good freeway access. However they recognize that the technical challenges and impacts make it infeasible. There is support in the San Fernando Valley for a one station concept providing it has good intermodal connectivity for public transit and road access.	The City of San Fernando is supportive of CHSTP, acknowledges the impact that the right-of-way required would have upon their city, and thereby supports a station location in San Fernando, believing the impact to be positive to the community in allowing for growth and TOD. The City of Los Angeles is concerned that there is not great access to this station. There is support in the San Fernando Valley for a one station concept providing it has good intermodal connectivity for public transit and road access.	Meetings with City of Burbank staff confirmed their agreement that this option should not be carried forward and their strong preference for a Burbank Buena Vista station.

APPENDIX B - OUTREACH MEETINGS

Briefings

Corridor Cities		
City of Los Angeles, Technical Working Group	February 9, 2011	Reviewed alignment alternatives and station location options.
City of Palmdale	February 9, 2011	Reviewed alignment alternatives and station location options.
City of Los Angeles, Valley Working Group	February 8, 2011	Reviewed alignment alternatives and station location options.
City of San Fernando	February 3, 2011	Reviewed alignment alternatives and station location options.
City of Glendale	February 2, 2011	Reviewed alignment alternatives and station location options.
Acton/Agua Dulce Working Group	January 18, 2011	Reviewed alignment alternatives.
City of Santa Clarita	January 5, 2011	Reviewed alignment alternatives.
City of San Fernando	November 15, 2010	Reviewed station block diagrams.
Town of Acton – Key stakeholders	November 12, 2010	Reviewed alignment alternatives.
City of Burbank	November 10, 2010	Reviewed station block diagrams.
City of San Fernando	October 28, 2010	Reviewed station block diagrams.
City of Burbank	October 28, 2010	Reviewed station block diagrams.

Acton/Agua Dulce Working Group	October 25, 2010	Reviewed project and alignment alternatives through Acton and Agua Dulce.
City of San Fernando	October 20, 2010	Reviewed station block diagrams.
City of Los Angeles, Department of Planning	October 13, 2010	Reviewed alignment alternatives. Preference is T1 alignment – ensure accessibility to the parks near Cornfields and Rio de Los Angeles.
San Fernando Valley Working Group	September 9, 2010	Reviewed Preliminary AA and grade crossings throughout the city of Los Angeles and station location options.
City of Santa Clarita Study Session	September 9, 2010	Provided Preliminary AA update and responded to questions and concerns from the Councilmembers.
City of Santa Clarita staff	August 31, 2010	Reviewed Preliminary AA and prepared for City Council Study Session.
Los Angeles Technical Working Group (P-LA section attendees: City of Los Angeles planners, LADOT, Metrolink, Metro, State Parks, NRDC)	August 31, 2010	Reviewed southern California sections as they relate to Los Angeles Union Station.
Acton/Agua Dulce Unified School District	August 30, 2010	Reviewed revised alignment alternatives to show no impacts to schools and discussed possible California Department of Education issues.
City of Burbank staff briefing	August 24, 2010	Update on station location options in Burbank.
City of San Fernando	July 22, 2010	Reviewed station options in the San Fernando Valley.
City of Glendale	July 22, 2010	Discussed right-of-way and grade crossings; future development plans;

		collaboration regarding grade crossings.
Acton/Agua Dulce Unified School District Meeting	July 12, 2010	Discussed new and existing school alignment impacts and construction timelines.
Local, State and Federal Agency Briefings		
Metro	January 13, 2011	Reviewed station location options.
Los Angeles Department of Water and Power	December 9, 2010	Discussed major LADWP utility crossings.
FAA/Los Angeles ADO	November 8, 2010	Reviewed Whiteman Airport ROW.
Metro/ODLA	October 13, 2010	Briefing on OLDA Burbank Airport Ground Access Study and Metro's proposed transit corridors in Burbank Airport area.
Army Corp of Engineers	October 6, 2010	Southern California section review including LA River crossings.
Palmdale Water District	September 22, 2010	Reviewed alignments and station location options.
Sempra Energy	September 22, 2010	Reviewed project.
SCAG	September 7, 2010	Reviewed SCAG, Metro and OCTA coordination efforts with regard to Los Angeles Union Station.
SCRRA/Metro	August 25, 2010	Discussed San Fernando Widening Project and HSR alignment proposals.
State Parks	August 6, 2010	Reviewed alignments through the State Historic Park and Rio de Los Angeles Park.
SCAG	September 7, 2010	Reviewed SCAG, Metro and OCTA coordination efforts with regard to Los Angeles Union

		Station.
Metro	July 13, 2010	Monthly coordination call to discuss upcoming events in southern California.
Community		
Downtown Los Angeles Neighborhood Council	February 1, 2011	Provided project overview to approximately 15 stakeholders.
Acton/Agua Dulce Business Groups	January 18, 2011	Provided project overview to approximately 30 stakeholders.
Santa Clarita School and Business Alliance	January 5, 2011	Provided overview to executive director.
Greater Griffith Park Neighborhood Council	December 21, 2010	Provided project overview to approximately 20 stakeholders.
Endangered Habitats League	December 21, 2010	Provided project overview to members.
North Area Neighborhood Development Council	December 2, 2010	Provided project overview to approximately 20 stakeholders.
Santa Clarita Economic Development Corporation	November 30, 2010	Provided project overview to Executive Director.
Dynamic Networking Alliance Santa Clarita Valley	November 18, 2010	Provided project overview to approximately 20 stakeholders.
HCNC	November 9, 2010	Provided project overview to approximately 30 stakeholders.
VICA Business Forecast	October 28, 2010	Provided project overview to approximately 25 stakeholders.
Arleta Neighborhood Council	October 19, 2010	Provided project overview to approximately 20 stakeholders.

Armenian Engineers and Scientists of America	October 12, 2010	Provided project overview to approximately 45 stakeholders.
Burbank Noon Kiwanis	September 22, 2010	Provided project overview to approximately 45 stakeholders.
NRDC/FOLAR	September 15, 2010	Reviewed alignment alternatives from LAUS to SR 2.
Canyon Country Advisory Committee	September 15, 2010	Provided project overview to approximately 50 stakeholders.
Northridge West Neighborhood Council	September 14, 200	Provided project overview to approximately 50 stakeholders.
Silverlake Neighborhood Council Transportation and Public Works Committee	September 13, 2010	Provided project overview to approximately 10 stakeholders.
Greater Cypress Park Neighborhood Council	September 2, 2010	Provided project overview to approximately 10 stakeholders.
Century City Rotary Club	September 1, 2010	Provided project overview to approximately 30 stakeholders.
The Transit Coalition	August 24, 2010	Provided project overview to approximately 30 stakeholders.
Sylmar Block Captains	August 19, 2010	Provided project overview to approximately 25 stakeholders.
Rampart Village Neighborhood Council	August 17, 2010	Provided project overview to approximately 12 stakeholders.
San Fernando Kiwanis Club	July 13, 2010	Provided project overview to approximately 15 stakeholders.
Elected Officials and Staff		
Supervisor Antonovich staff	February 4, 2011	Reviewed alignment

		alternatives and station location options.
Assemblymember Fuentes staff	January 25, 2011	Reviewed alignment alternatives and station location options in San Fernando Valley.
Councilmember Cardenas staff	January 26, 2011	Reviewed alignment alternatives and station location options in San Fernando Valley.
Senator Padilla staff	January 12, 2011	Reviewed station location options in San Fernando Valley.
Congressman Becerra staff	December 21, 2010	Reviewed outreach in community.
Councilmember LaBonge and staff	December 10, 2010	Reviewed grade crossings.
Councilmember LaBonge staff	November 23, 2010	Reviewed grade crossings.
Supervisor Antonovich staff	September 14, 2010	Reviewed SAA with staff.
Congressman Becerra and staff	August 25, 2010	Provided statewide, regional and section-specific overview.
Councilmember Cardenas staff	August 24, 2010	Discussed station location options.
Alignment tour with Assemblymember Galgiani	July 9, 2010	Tour to review alignment alternatives and station location options.
Environmental Justice		
Bus Riders Union	December 8, 2010	Provided project overview to members.
Concerned Citizens of South Los Angeles	December 7, 2010	Provided project overview to Executive Director and Community Redevelopment Agency representative.
Pacoima Beautiful	October 20, 2010	Provided project overview to Initiative Coordinator.
Environmental Priorities Networks	October 7, 2010	Provided project overview to approximately 12 stakeholders.

Activity Centers		
Mobility 21	October 29, 2010	Engaged with approximately 50 stakeholders.
CMAA Owner’s Night	October 14, 2010	Engaged with approximately 50 stakeholders.
Downtown 2010 Symposium	October 12, 2010	Engaged with approximately 30 stakeholders.
Nisei Week Festival	August 14 – 15, 2010	Engaged with approximately 200 stakeholders.
Venice Beach Eco Fest	July 10, 2010	Engaged with approximately 100 stakeholders.
Community Open Houses		
Downtown Los Angeles	September 21, 2010	Shared alignment alternatives and station location options to more than 300 stakeholders.
Santa Clarita	August 26, 2010 – Santa Clarita Sports Complex	Shared alignment alternatives and station location options to more than 30 stakeholders.
Burbank	August 25, 2010 – Buena Vista Library	Shared alignment alternatives and station location options to more than 100 stakeholders and elected officials.
Palmdale	August 23, 2010 – Chimbole Center	Shared alignment alternatives and station location options to more than 50 stakeholders.

APPENDIX C - PLAN AND PROFILE DRAWINGS

Revised drawings have been included in this report, for the following alternatives

LAUS to SR 2 – LAPT1, LAPT3, LAP1C

SR 2 to Sylmar – Burbank Metrolink Station (new drawings)

For drawings of other alternatives see Appendix D of the *July 2010 Preliminary AA report*.

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SHT DWG No. TITLE

GENERAL SHEETS

1	LAP-CB0000	COVER SHEET
	LAP-CB0101	DRAWING INDEX
2	LAP-CB0102	UNCHANGED - SEE PRELIMINARY AA

LAUS TO SR-2 ALTERNATIVE "LAPT1"

1	LAP-CB1110	PLAN AND PROFILE	STA 279+84	TO STA 310+00
2	LAP-CB1111	PLAN AND PROFILE	STA 310+00	TO STA 360+00
3	LAP-CB1112	PLAN AND PROFILE	STA 360+00	TO STA 410+00
4	LAP-CB1113	PLAN AND PROFILE	STA 410+00	TO STA 460+00
5	LAP-CB1114	PLAN AND PROFILE	STA 460+00	TO STA 520+00

LAUS TO SR-2 ALTERNATIVE "LAPT2"

1	LAP-CB1210	} UNCHANGED - SEE PRELIMINARY AA
2	LAP-CB1211	
3	LAP-CB1212	
4	LAP-CB1213	
5	LAP-CB1214	

LAUS TO SR-2 ALTERNATIVE "LAPT3"

1	LAP-CB1310	PLAN AND PROFILE	STA 276+75	TO STA 310+00
2	LAP-CB1311	PLAN AND PROFILE	STA 310+00	TO STA 360+00
3	LAP-CB1312	PLAN AND PROFILE	STA 360+00	TO STA 410+00
4	LAP-CB1313	PLAN AND PROFILE	STA 410+00	TO STA 460+00
5	LAP-CB1314	PLAN AND PROFILE	STA 460+00	TO STA 520+00

LAUS TO SR-2 ALTERNATIVE "LAP1C"

1	LAP-CB1610	PLAN AND PROFILE	STA 252+35	TO STA 290+00
2	LAP-CB1611	PLAN AND PROFILE	STA 290+00	TO STA 340+00
3	LAP-CB1612	PLAN AND PROFILE	STA 340+00	TO STA 400+00
4	LAP-CB1613	PLAN AND PROFILE	STA 400+00	TO STA 460+00
5	LAP-CB1614	PLAN AND PROFILE	STA 460+00	TO STA 520+00

SHT DWG No. TITLE

SR-2 TO SYLMAR ALTERNATIVE "ESS"

1	LAP-CB2201	} UNCHANGED - SEE PRELIMINARY AA
2	LAP-CB2202	
3	LAP-CB2203	
4	LAP-CB2204	
5	LAP-CB2205	
6	LAP-CB2206	
7	LAP-CB2207	
8	LAP-CB2208	
9	LAP-CB2209	
10	LAP-CB2210	
11	LAP-CB2211	
12	LAP-CB2212	
13	LAP-CB2213	
14	LAP-CB2214	
15	LAP-CB2215	
16	LAP-CB2216	
17	LAP-CB2217	

BURBANK BUENA VISTA STATION ALTERNATIVE "BVS"

1	LAP-CB2308	} UNCHANGED - SEE PRELIMINARY AA
2	LAP-CB2309	
3	LAP-CB2310	

BRANFORD STREET STATION ALTERNATIVE "BSS"

1	LAP-CB2412	} UNCHANGED - SEE PRELIMINARY AA
2	LAP-CB2413	
3	LAP-CB2414	

PACOIMA WASH STATION ALTERNATIVE "PWS"

1	LAP-CB2514	} UNCHANGED - SEE PRELIMINARY AA
2	LAP-CB2515	
3	LAP-CB2516	

SHT DWG No. TITLE

SYLMAR/SAN FERNANDO STATION ALTERNATIVE "SFS"

1	LAP-CB2615	} UNCHANGED - SEE PRELIMINARY AA
2	LAP-CB2616	
3	LAP-CB2617	

BURBANK METROLINK STATION ALTERNATIVE "BMS"

1	LAP-CB2704	PLAN AND PROFILE	STA 670+00	TO STA 730+00
2	LAP-CB2705	PLAN AND PROFILE	STA 730+00	TO STA 790+00
3	LAP-CB2706	PLAN AND PROFILE	STA 790+00	TO STA 850+00
4	LAP-CB2707	PLAN AND PROFILE	STA 850+00	TO STA 910+00

SYLMAR TO PALMDALE ALTERNATIVE "SR 14 EAST"

1	LAP-CB3100	} UNCHANGED - SEE PRELIMINARY AA
2	LAP-CB3101	
3	LAP-CB3102	
4	LAP-CB3103	
5	LAP-CB3104	
6	LAP-CB3105	
7	LAP-CB3106	
8	LAP-CB3107	
9	LAP-CB3108	
10	LAP-CB3109	
11	LAP-CB3110	
12	LAP-CB3111	
13	LAP-CB3112	
14	LAP-CB3113	
15	LAP-CB3114	
16	LAP-CB3115	

SYLMAR TO PALMDALE ALTERNATIVE "SR 14 WEST"

5	LAP-CB3204	} UNCHANGED - SEE PRELIMINARY AA
6	LAP-CB3205	
7	LAP-CB3206	
8	LAP-CB3207	
9	LAP-CB3208	
10	LAP-CB3209	
11	LAP-CB3210	
12	LAP-CB3211	
13	LAP-CB3212	
14	LAP-CB3213	
15	LAP-CB3214	

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REV	DATE	BY	CHK	APP	DESCRIPTION

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DRAWN BY	D. ORIZA
CHECKED BY	N. CARSTAIRS
IN CHARGE	R. HOLMQUIST
DATE	07/02/2010



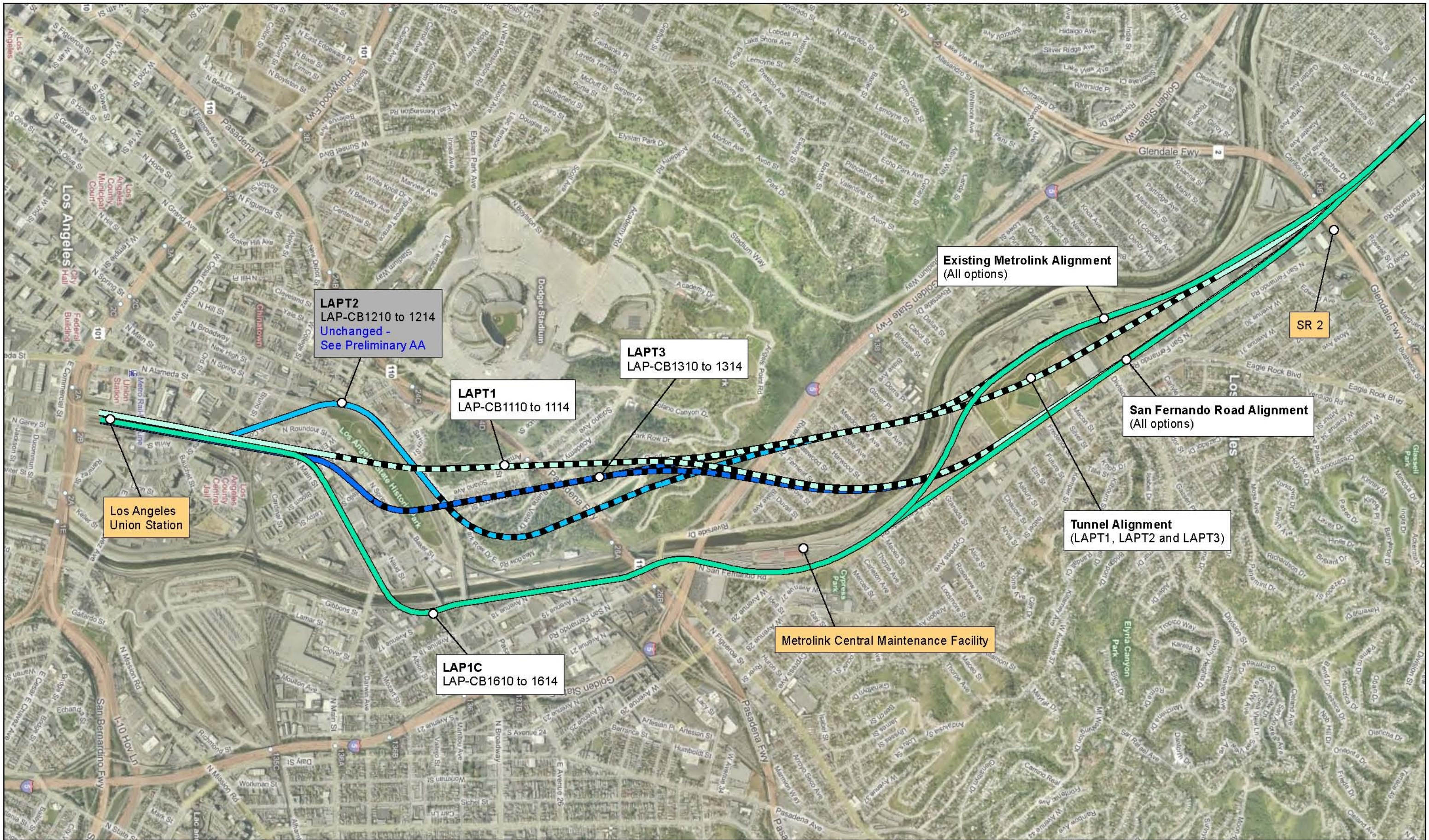
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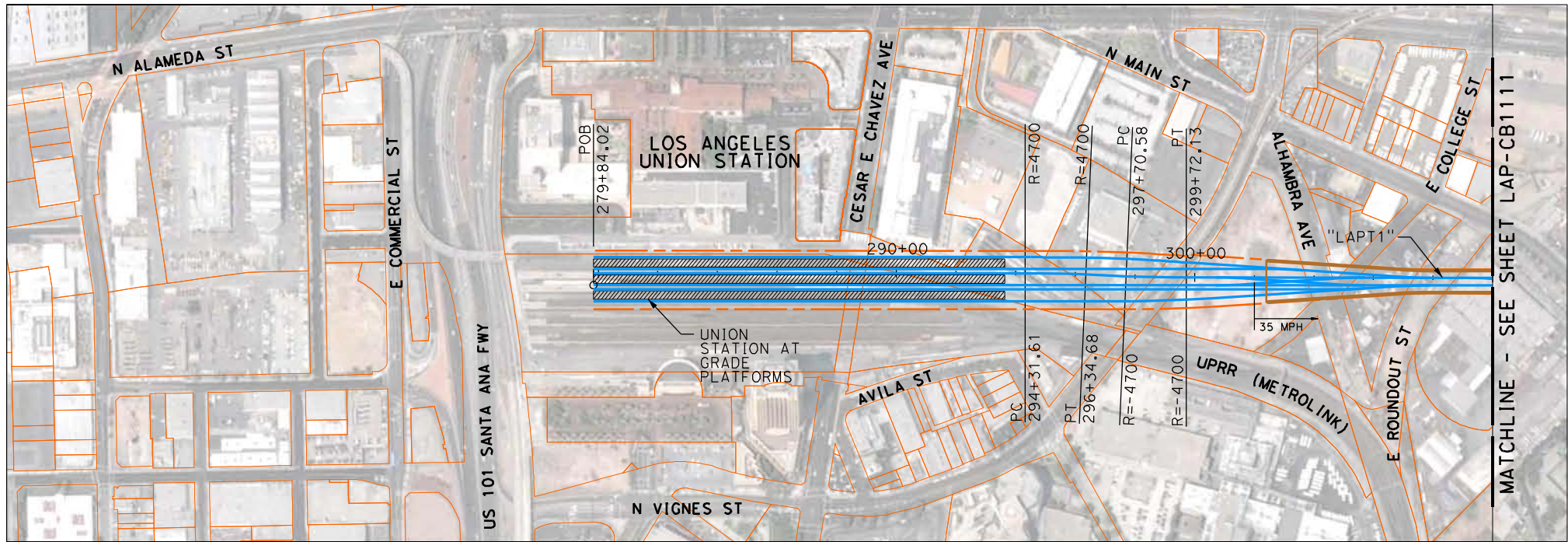


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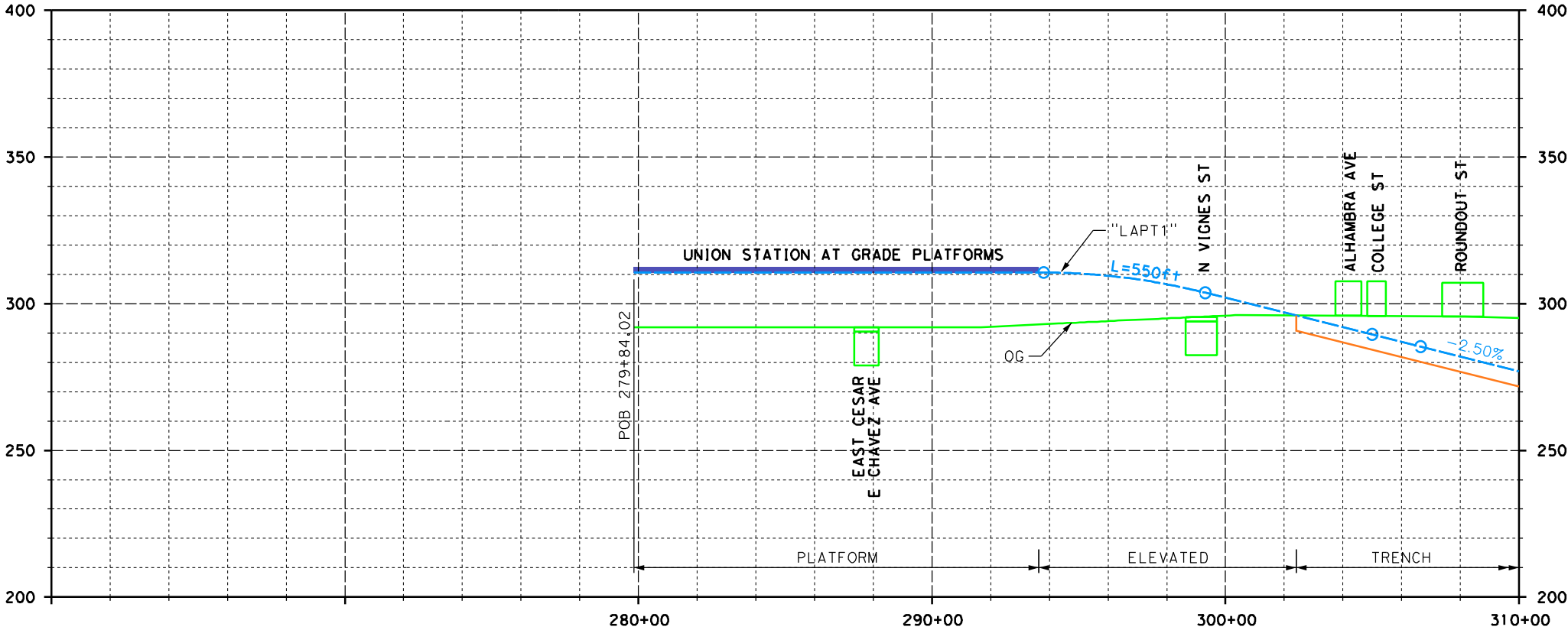
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PALMDALE TO LOS ANGELES
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DRAWING INDEX

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SHEET NO. 1 OF 2

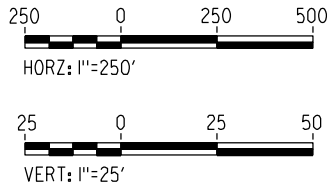
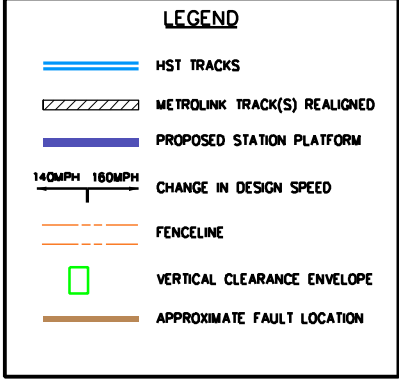
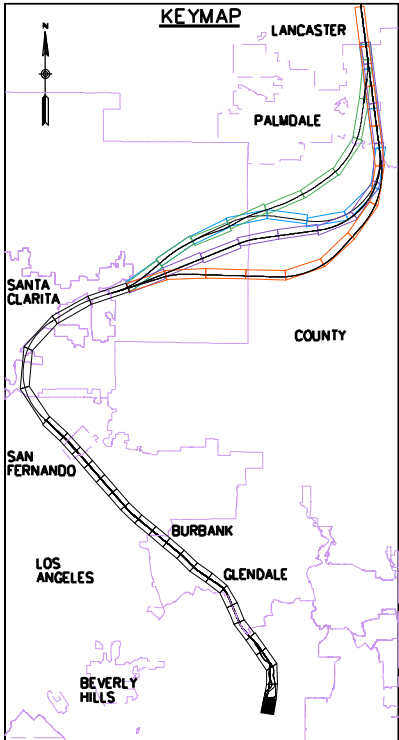




PLAN



PROFILE



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REV	DATE	BY	CHK	APP	DESCRIPTION
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DESIGNED BY J. LANGHAM
DRAWN BY J. REILLY
CHECKED BY N. CARSTAIRS
IN CHARGE R. HOLMQUIST
DATE 07/02/2010



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A HIGH-SPEED RAIL JOINT VENTURE

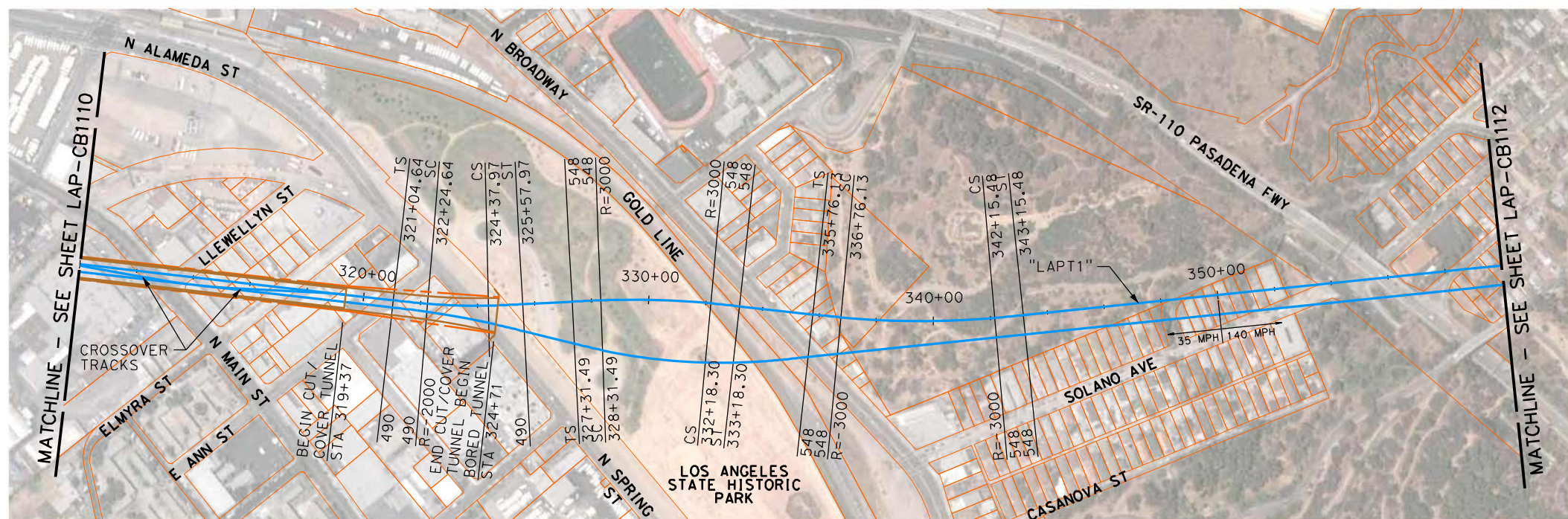


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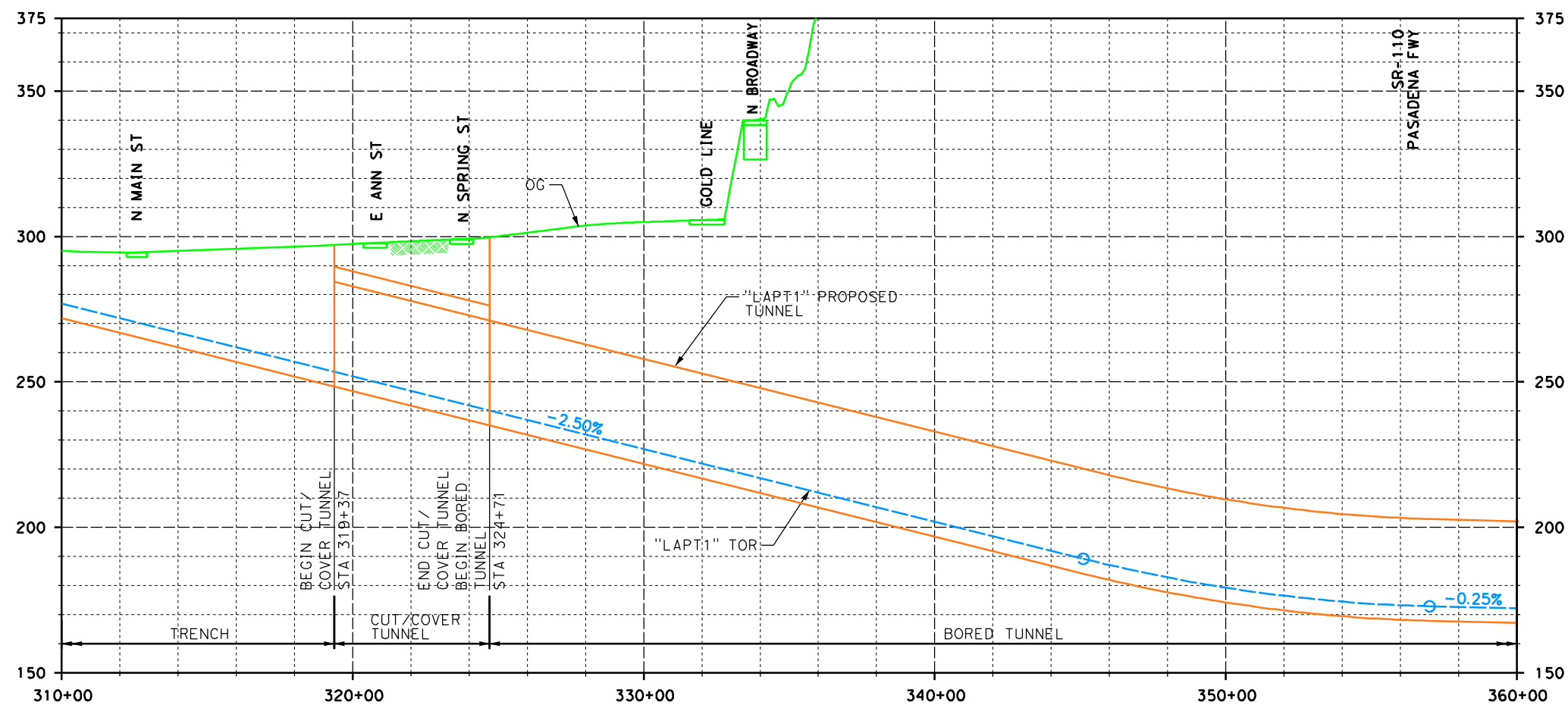
**CALIFORNIA HIGH-SPEED TRAIN PROJECT
PALMDALE TO LOS ANGELES**

ALTERNATIVES ANALYSIS
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PLAN AND PROFILE
STA 279+67 TO 310+00

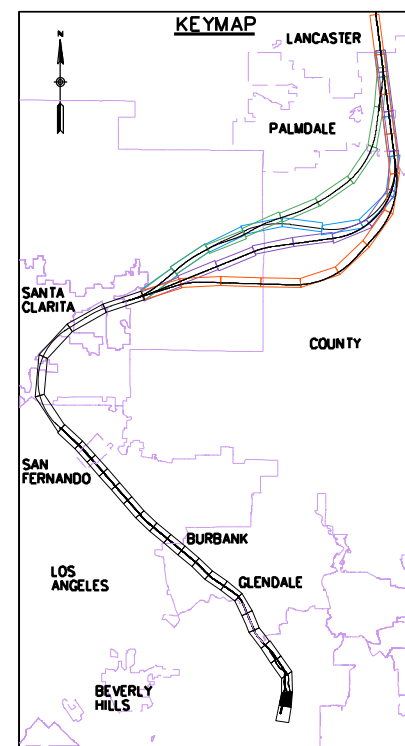
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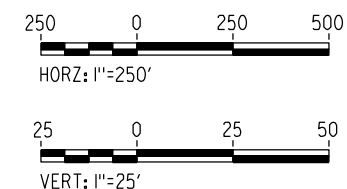
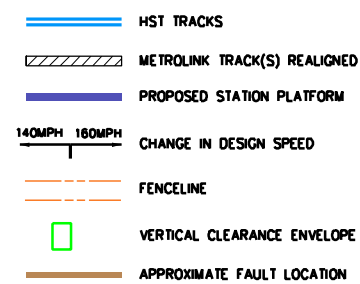
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REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY	J. LANGHAM
DRAWN BY	J. REILLY
CHECKED BY	N. CARSTAIRS
IN CHARGE	R. HOLMQUIST
DATE	07/02/2010



Hatch Mott MacDonald, URS, & Arup
A HIGH-SPEED RAIL JOINT VENTURE



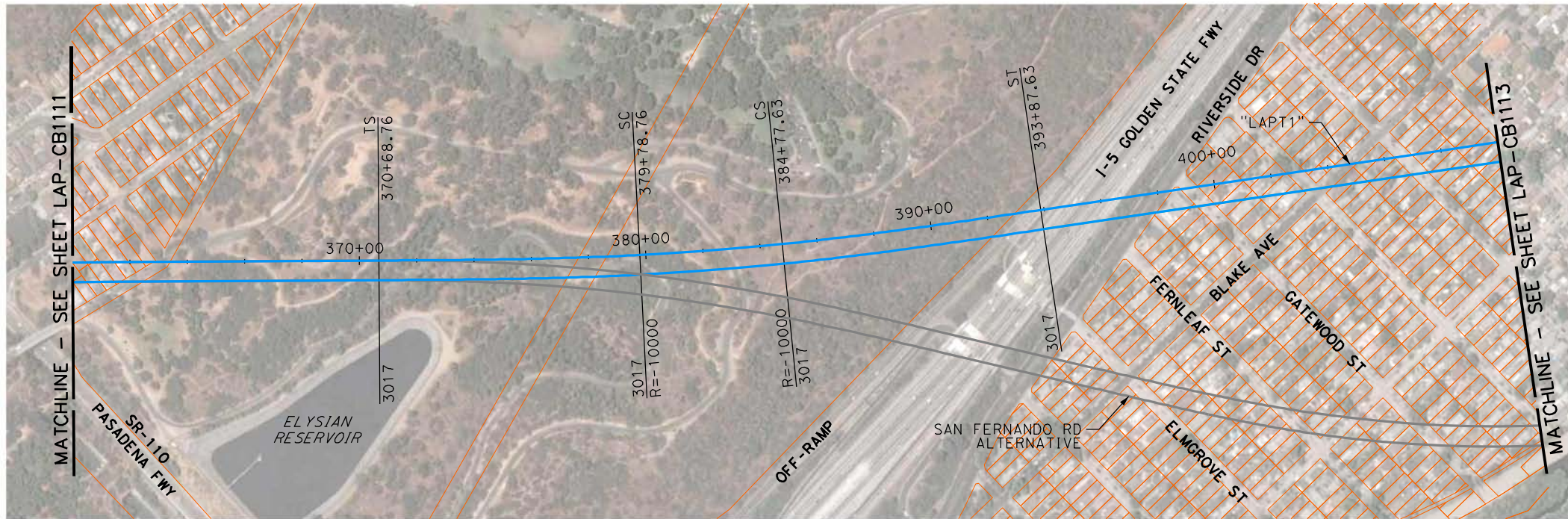
CALIFORNIA
HIGH-SPEED RAIL AUTHORITY

**CALIFORNIA HIGH-SPEED TRAIN PROJECT
PALMDALE TO LOS ANGELES**

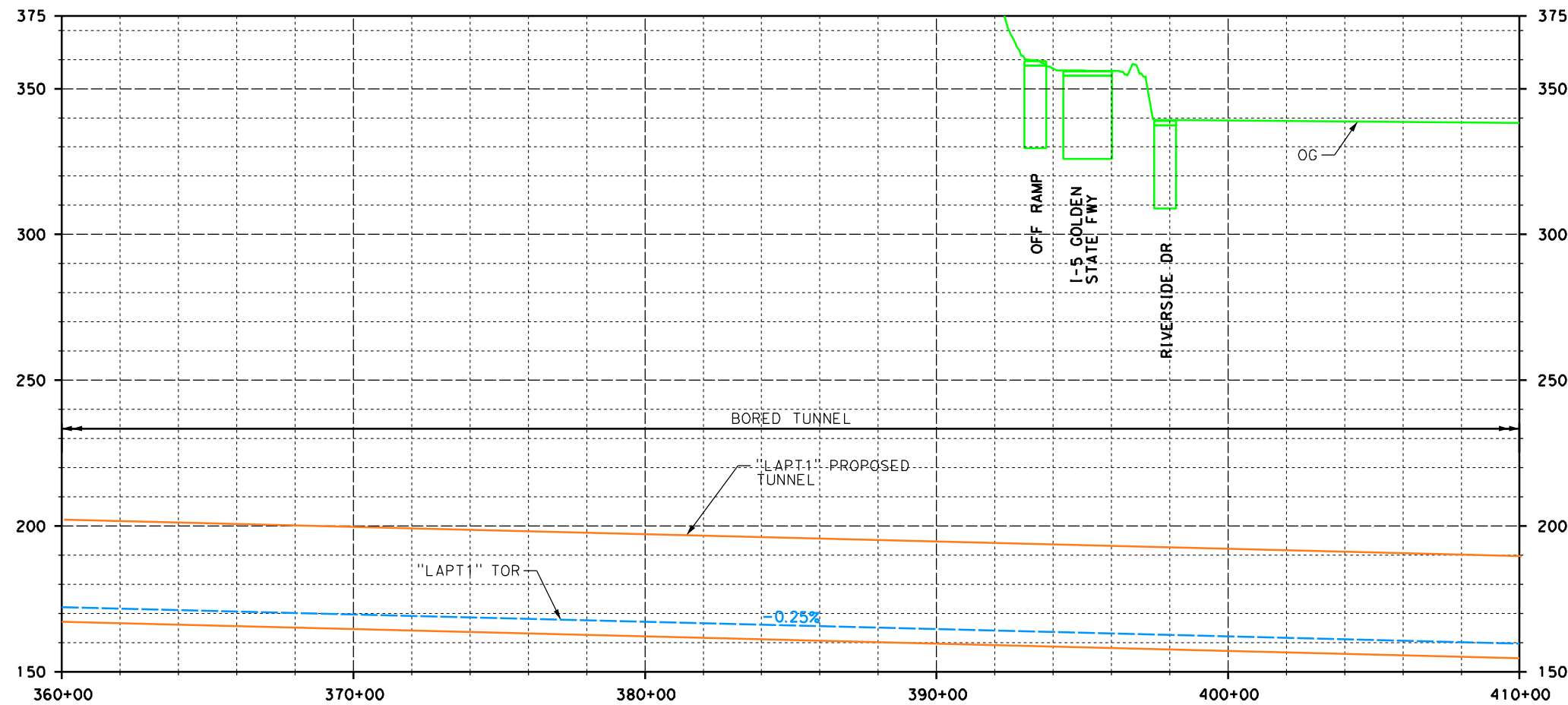
ALTERNATIVES ANALYSIS
LAUS TO SR-2 - "LAPT1"
PLAN AND PROFILE
STA 310+00 TO 360+00

CONTRACT NO.
DRAWING NO. LAP-CB1111
SCALE AS SHOWN
SHEET NO. 2 OF 5

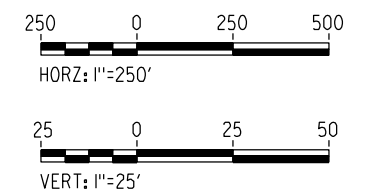
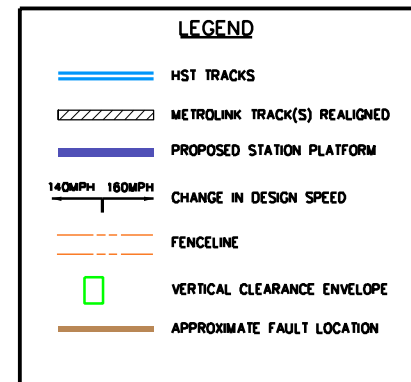
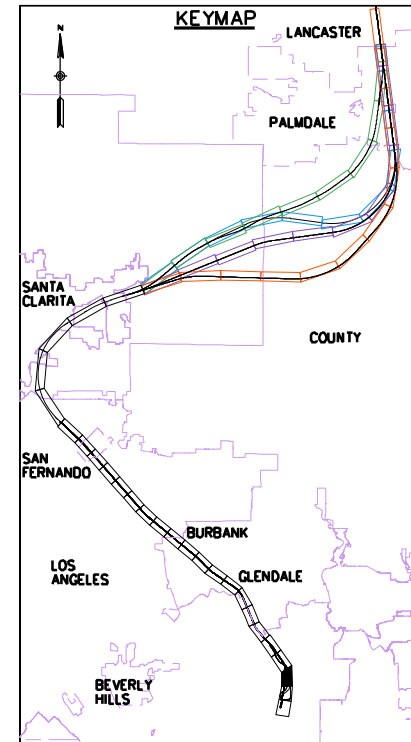
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PLAN



PROFILE

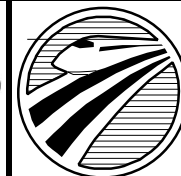


REV	DATE	BY	CHK	APP	DESCRIPTION
A	10/07/10	FC	JE	NC	UPDATED FOR SUPPLEMENTAL ALTERNATIVE ANALYSIS

DESIGNED BY
J. LANGHAM
DRAWN BY
J. REILLY
CHECKED BY
N. CARSTAIRS
IN CHARGE
R. HOLMQUIST
DATE
07/02/2010



Hatch Mott MacDonald, URS, & Arup
A HIGH-SPEED RAIL JOINT VENTURE



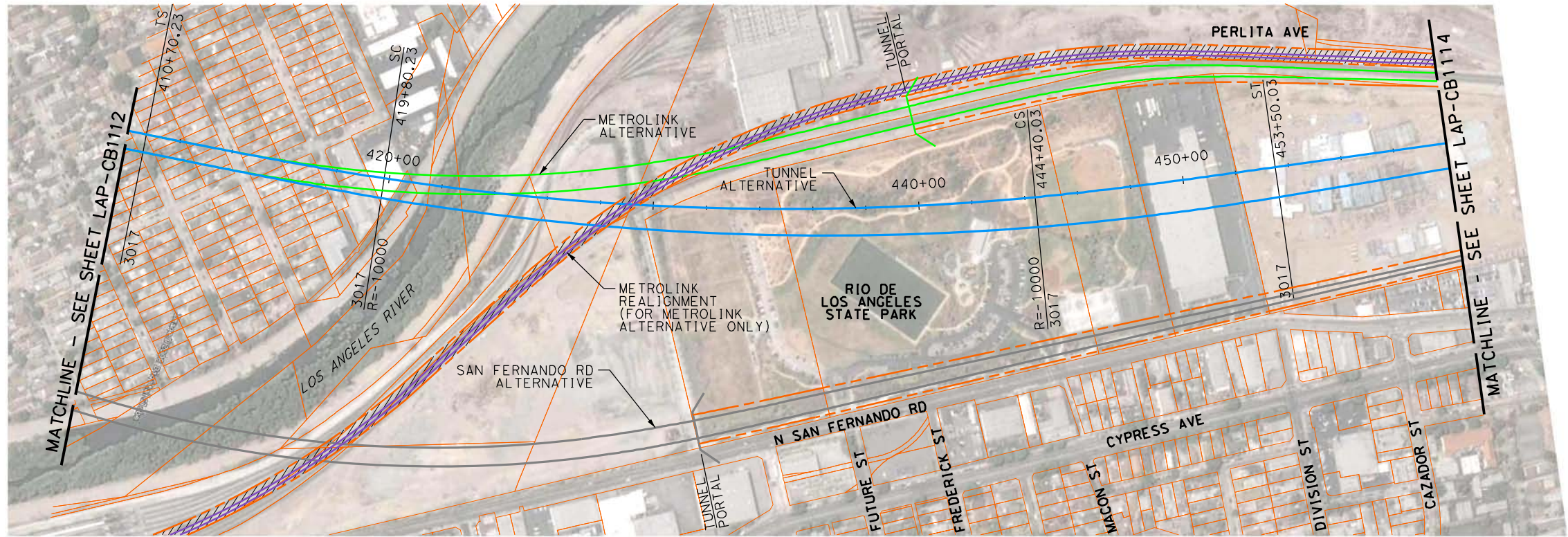
CALIFORNIA
HIGH-SPEED RAIL AUTHORITY

**CALIFORNIA HIGH-SPEED TRAIN PROJECT
PALMDALE TO LOS ANGELES**

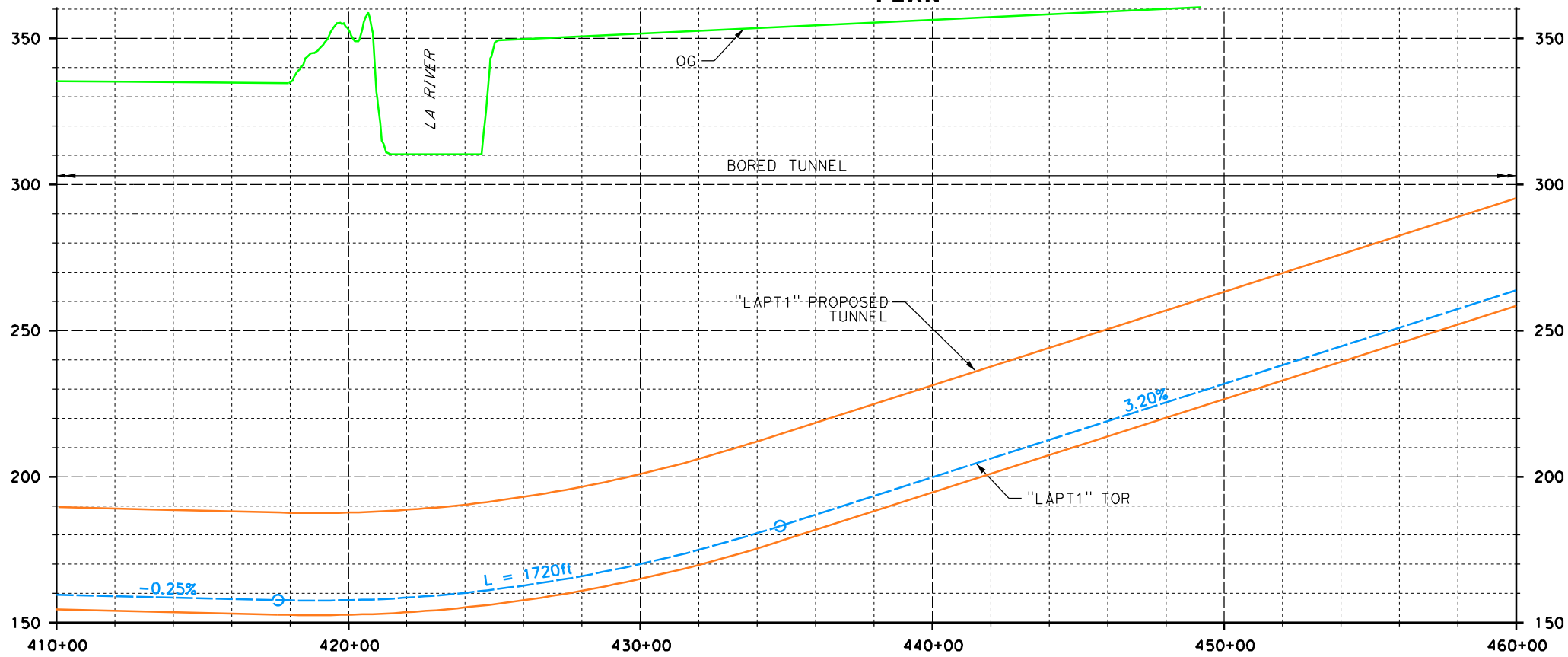
ALTERNATIVES ANALYSIS
LAUS TO SR-2 - "LAPT1"
PLAN AND PROFILE
STA 360+00 TO 410+00

CONTRACT NO.
DRAWING NO. LAP-CB1112
SCALE AS SHOWN
SHEET NO. 3 OF 5

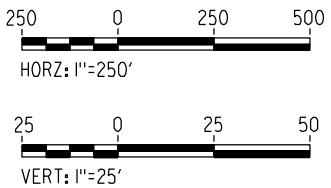
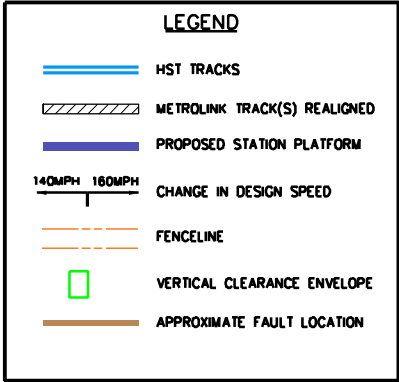
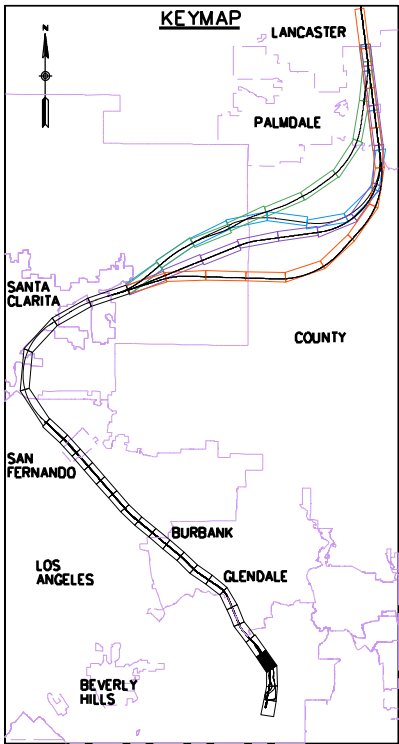
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PLAN



PROFILE



REV	DATE	BY	CHK	APP	DESCRIPTION
A	10/07/10	FC	JE	NC	UPDATED FOR SUPPLEMENTAL ALTERNATIVE ANALYSIS

DESIGNED BY
J. LANGHAM
DRAWN BY
J. REILLY
CHECKED BY
N. CARSTAIRS
IN CHARGE
R. HOLMQUIST
DATE
07/02/2010



Hatch Mott MacDonald, URS, & Arup
A HIGH-SPEED RAIL JOINT VENTURE

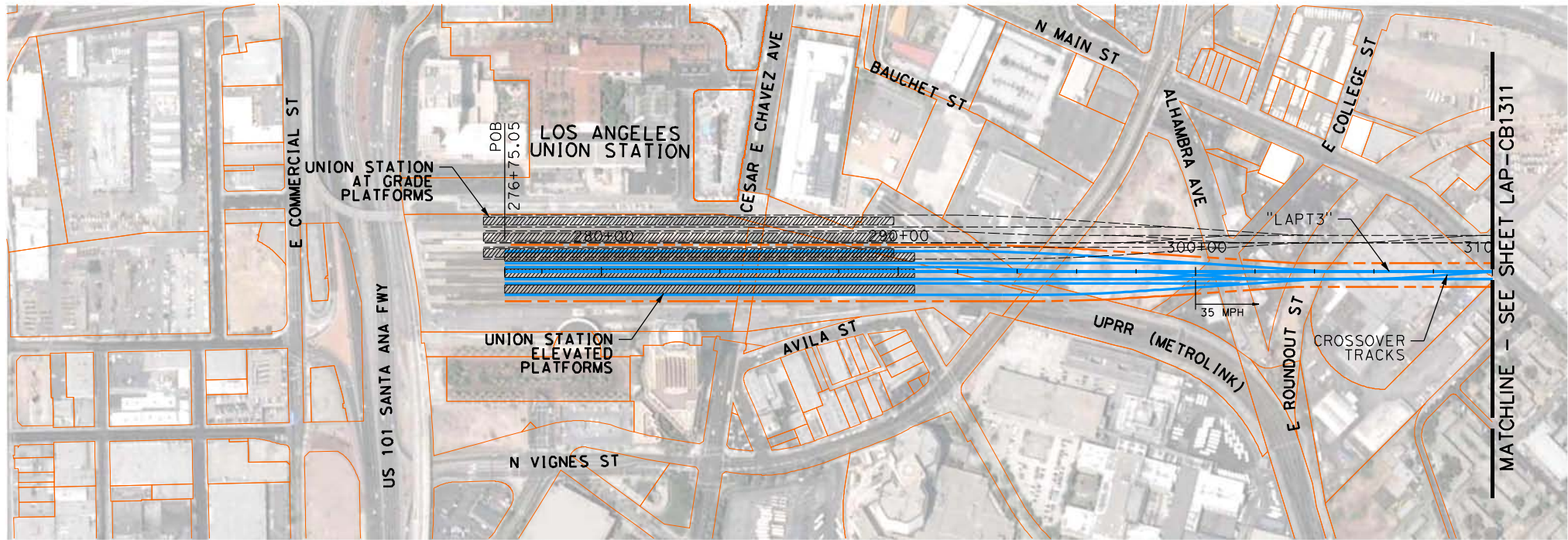


CALIFORNIA
HIGH-SPEED RAIL AUTHORITY

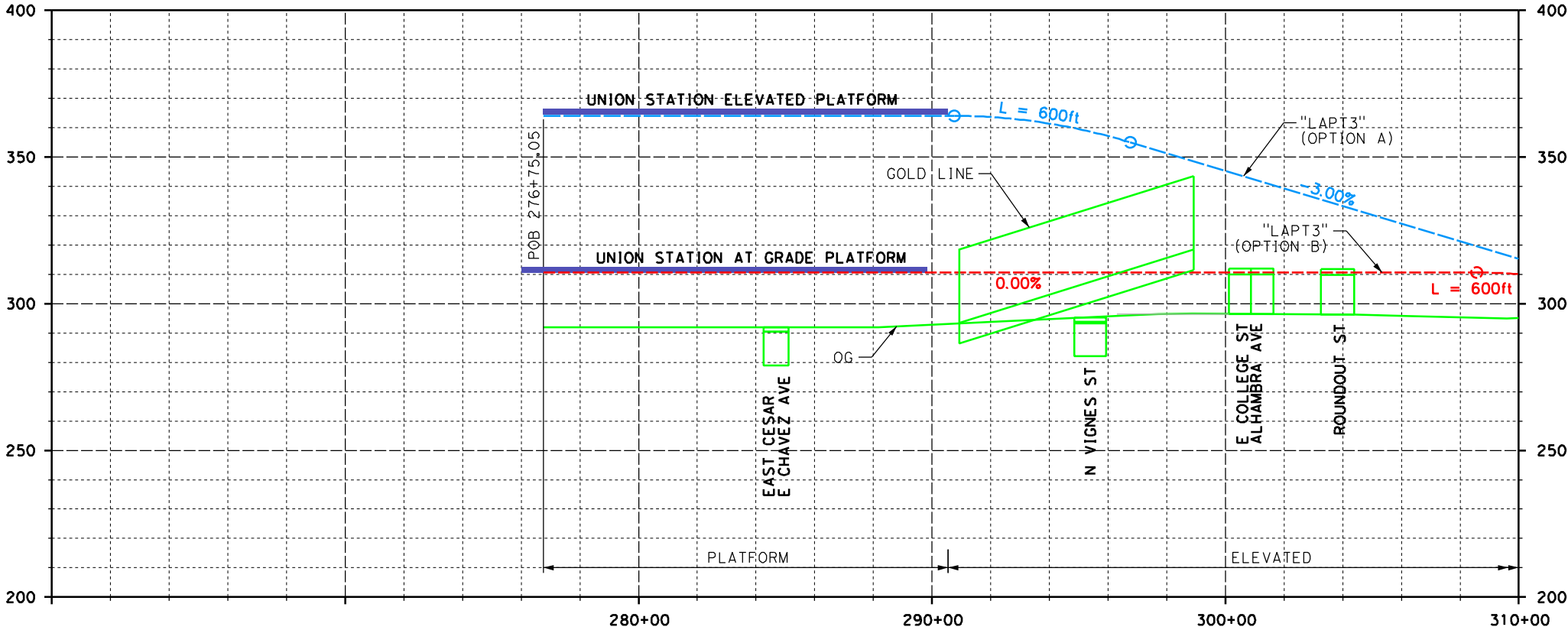
**CALIFORNIA HIGH-SPEED TRAIN PROJECT
PALMDALE TO LOS ANGELES**

ALTERNATIVES ANALYSIS
LAUS TO SR-2 - "LAPT1"
PLAN AND PROFILE
STA 410+00 TO 460+00

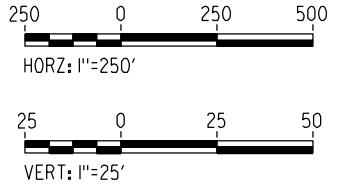
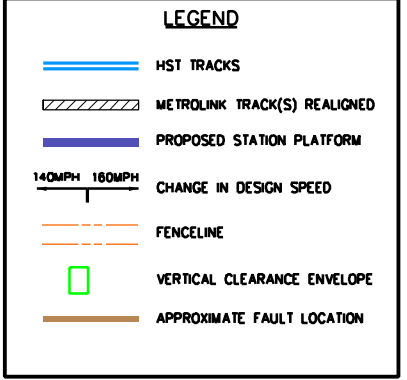
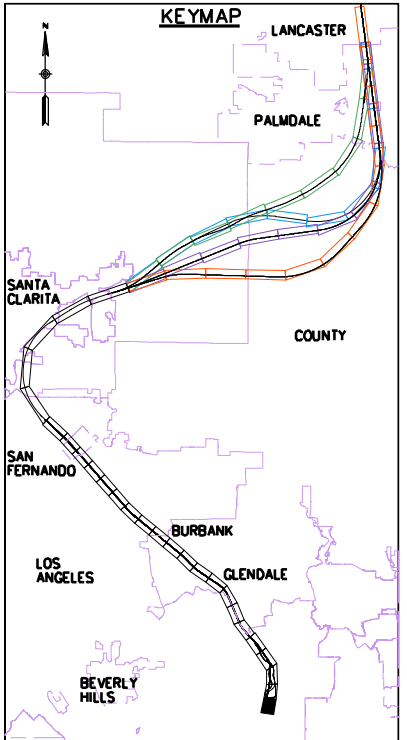
CONTRACT NO.
DRAWING NO. LAP-CB1113
SCALE AS SHOWN
SHEET NO. 4 OF 5



PLAN



PROFILE



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REV	DATE	BY	CHK	APP	DESCRIPTION
A	10/07/10	FC	JE	NC	UPDATED FOR SUPPLEMENTAL ALTERNATIVE ANALYSIS

DESIGNED BY J. LANGHAM
DRAWN BY B. BODIN
CHECKED BY N. CARSTAIRS
IN CHARGE R. HOLMQUIST
DATE 07/02/2010



Hatch Mott MacDonald, URS, & Arup
A HIGH-SPEED RAIL JOINT VENTURE



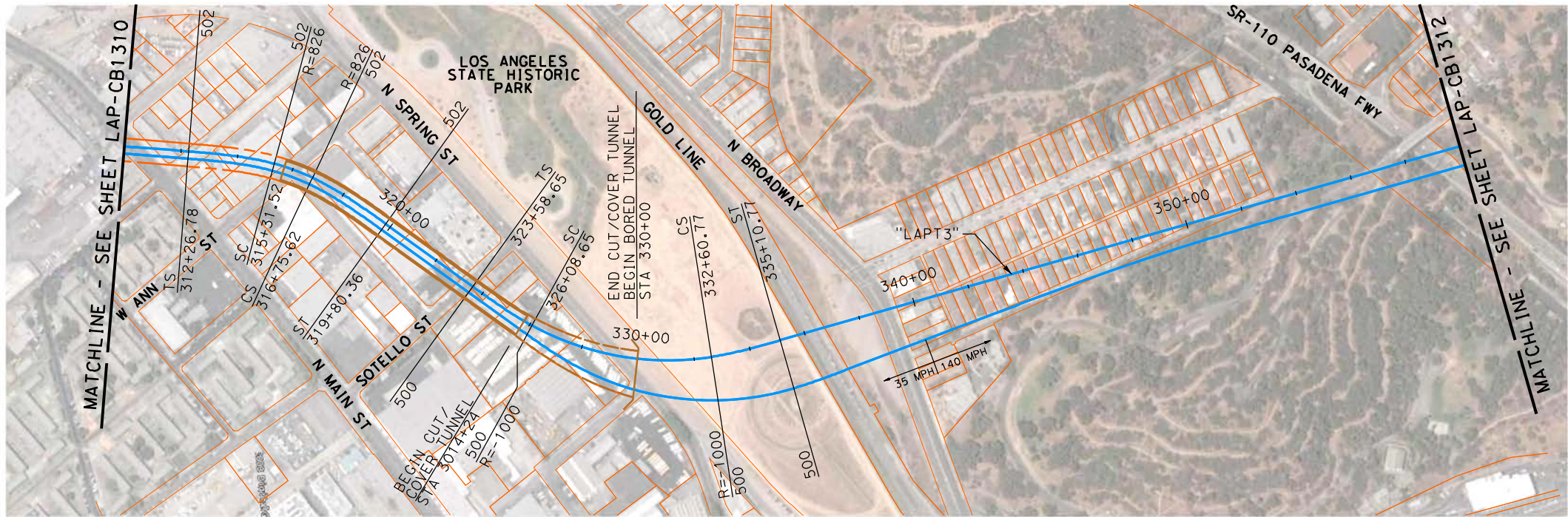
CALIFORNIA
HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
PALMDALE TO LOS ANGELES

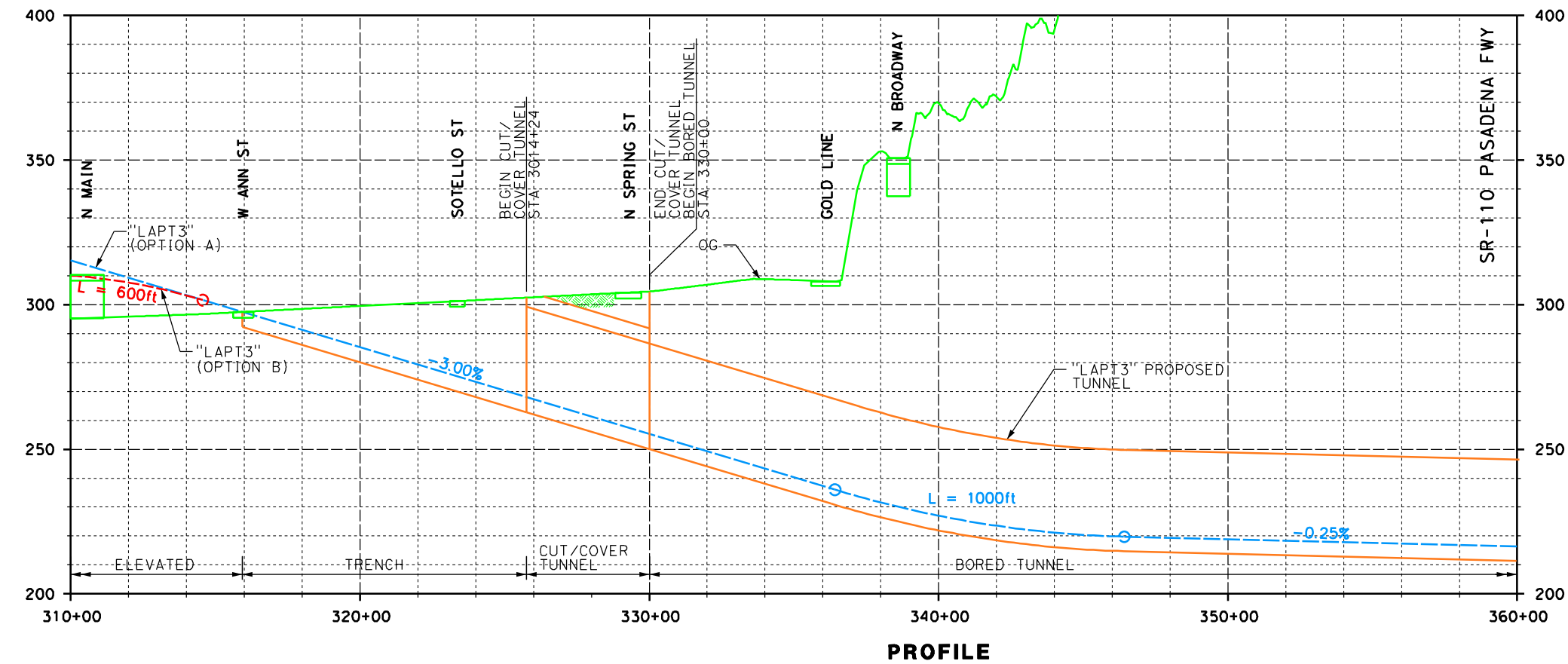
ALTERNATIVES ANALYSIS
LAUS TO SR-2 - "LAPT3"
PLAN AND PROFILE
STA 276+75 TO 310+00

CONTRACT NO.
DRAWING NO. LAP-CB1310
SCALE AS SHOWN
SHEET NO. 1 OF 5

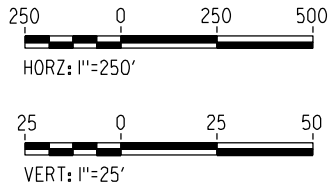
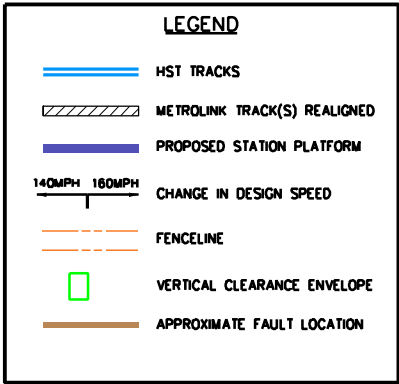
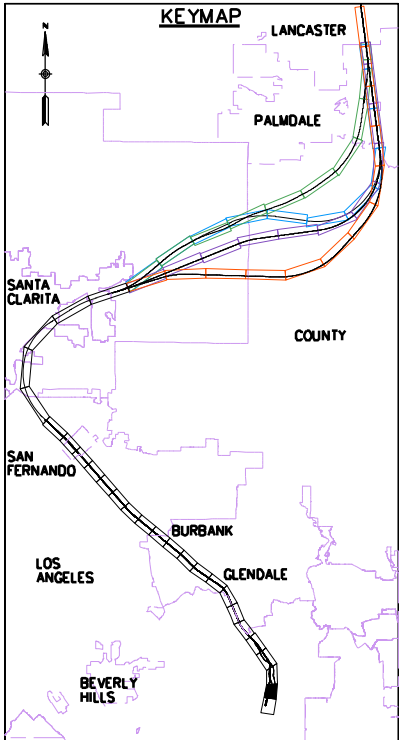
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PLAN



PROFILE



REV	DATE	BY	CHK	APP	DESCRIPTION
A	10/07/10	FC	JE	NC	UPDATED FOR SUPPLEMENTAL ALTERNATIVE ANALYSIS

DESIGNED BY J. LANGHAM
DRAWN BY J. REILLY
CHECKED BY N. CARSTAIRS
IN CHARGE R. HOLMQUIST
DATE 07/02/2010



Hatch Mott MacDonald, URS, & Arup
A HIGH-SPEED RAIL JOINT VENTURE

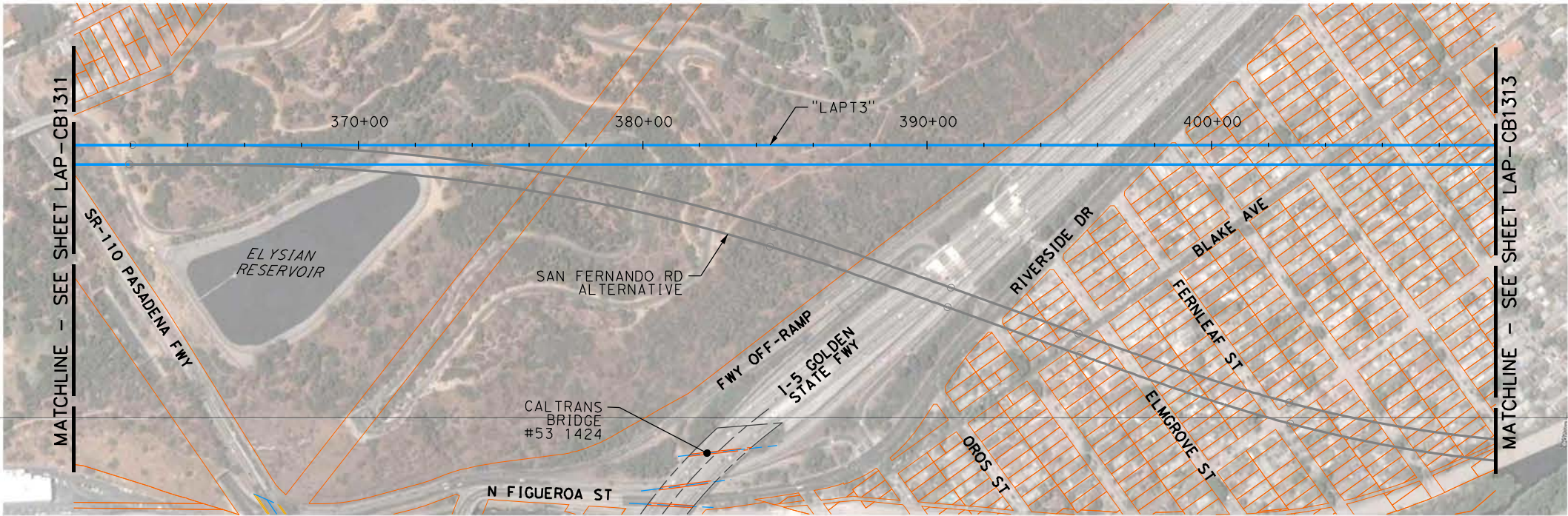


CALIFORNIA
HIGH-SPEED RAIL AUTHORITY

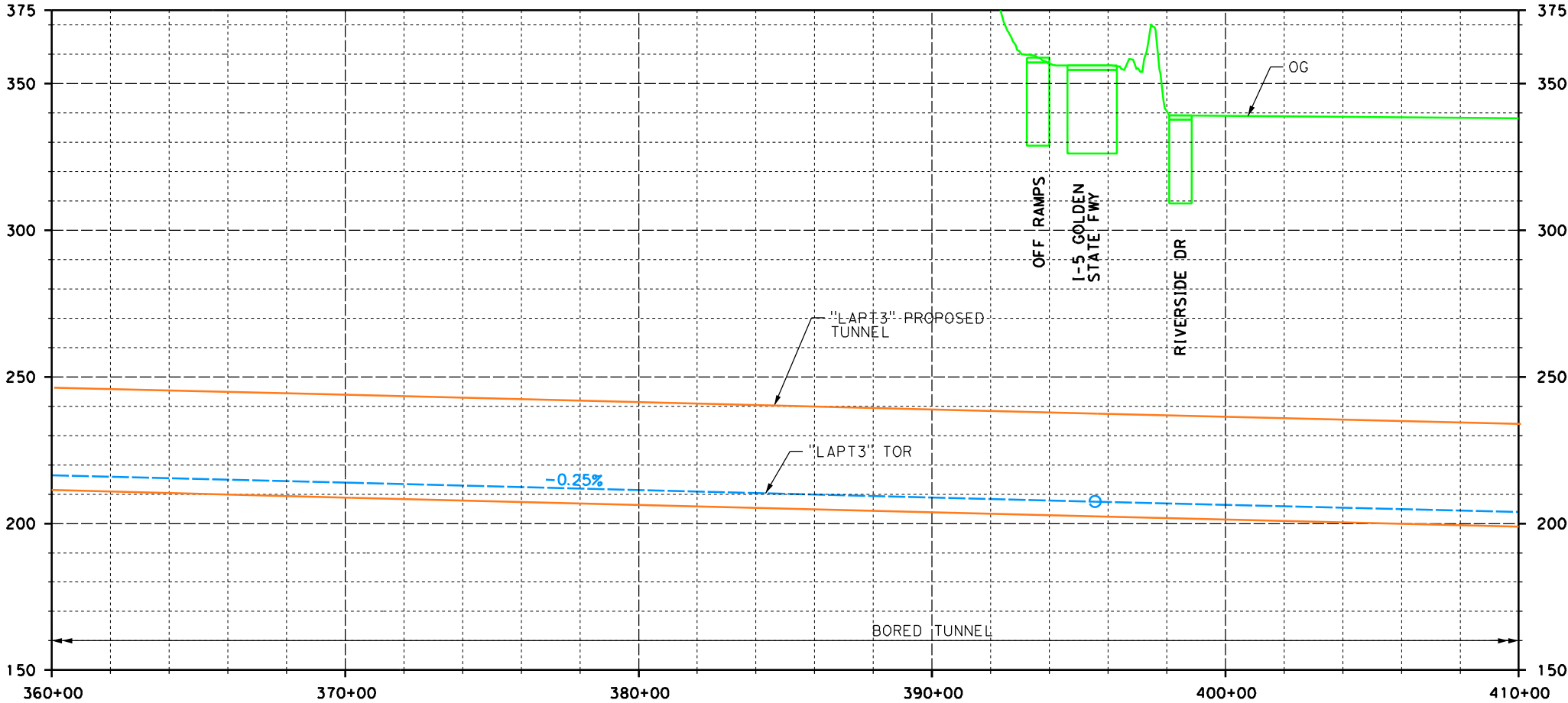
CALIFORNIA HIGH-SPEED TRAIN PROJECT
PALMDALE TO LOS ANGELES

ALTERNATIVES ANALYSIS
LAUS TO SR-2 - "LAPT3"
PLAN AND PROFILE
STA 310+00 TO 360+00

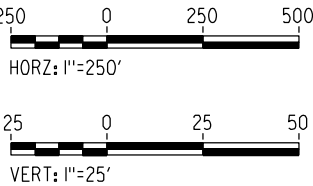
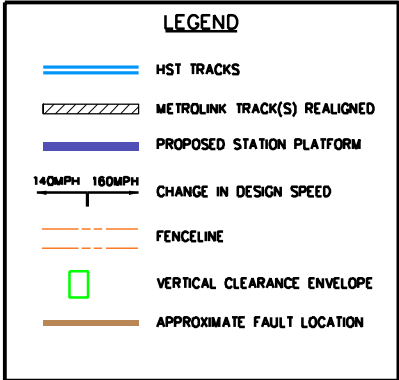
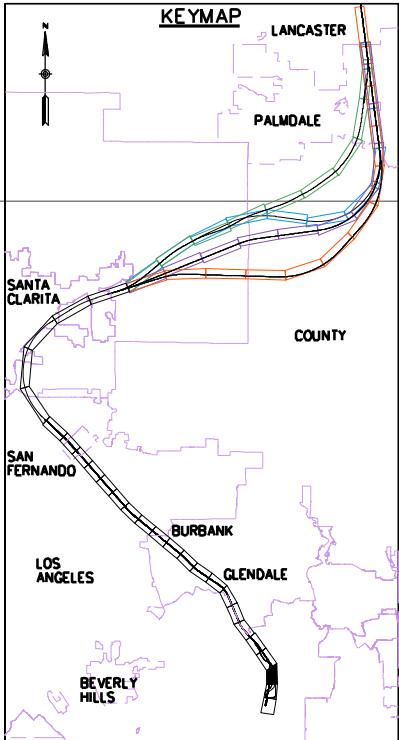
CONTRACT NO.
DRAWING NO. LAP-CB1311
SCALE AS SHOWN
SHEET NO. 2 OF 5



PLAN



PROFILE



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REV	DATE	BY	CHK	APP	DESCRIPTION
A	10/07/10	FC	JE	NC	UPDATED FOR SUPPLEMENTAL ALTERNATIVE ANALYSIS

DESIGNED BY J. LANGHAM
DRAWN BY B. BODIN
CHECKED BY N. CARSTAIRS
IN CHARGE R. HOLMQUIST
DATE 07/02/2010



Hatch Mott MacDonald, URS, & Arup
A HIGH-SPEED RAIL JOINT VENTURE

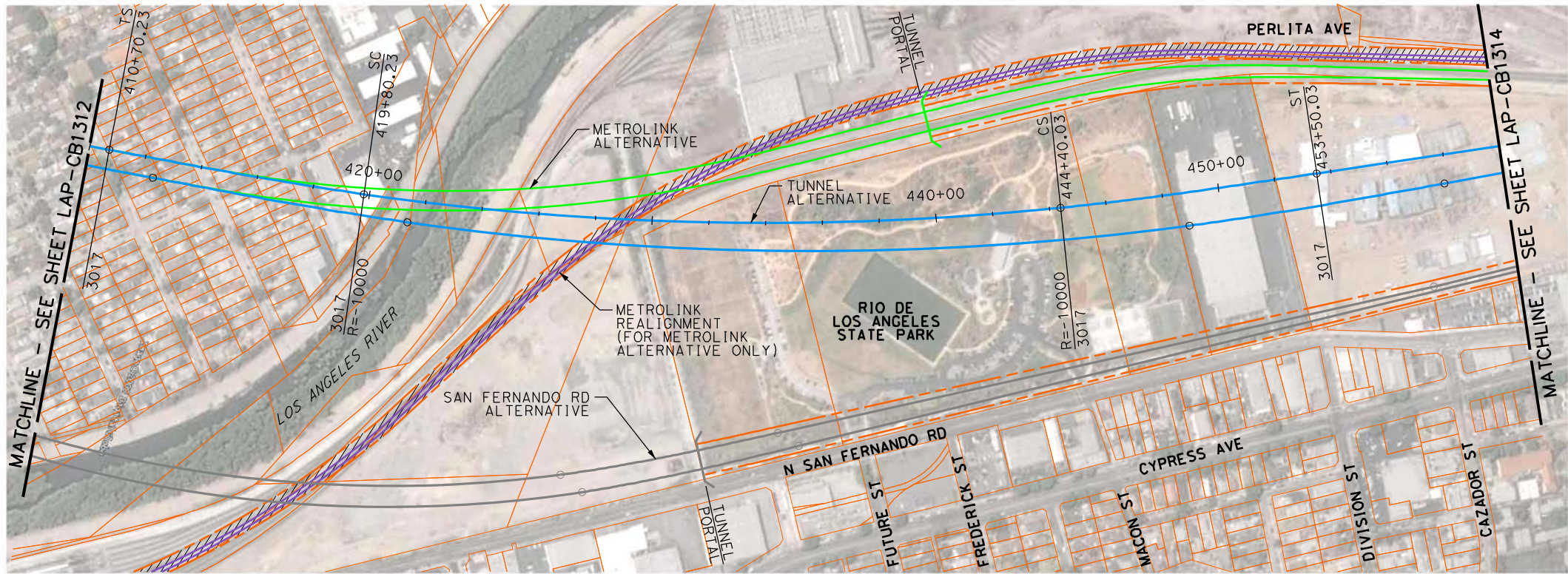


CALIFORNIA
HIGH-SPEED RAIL AUTHORITY

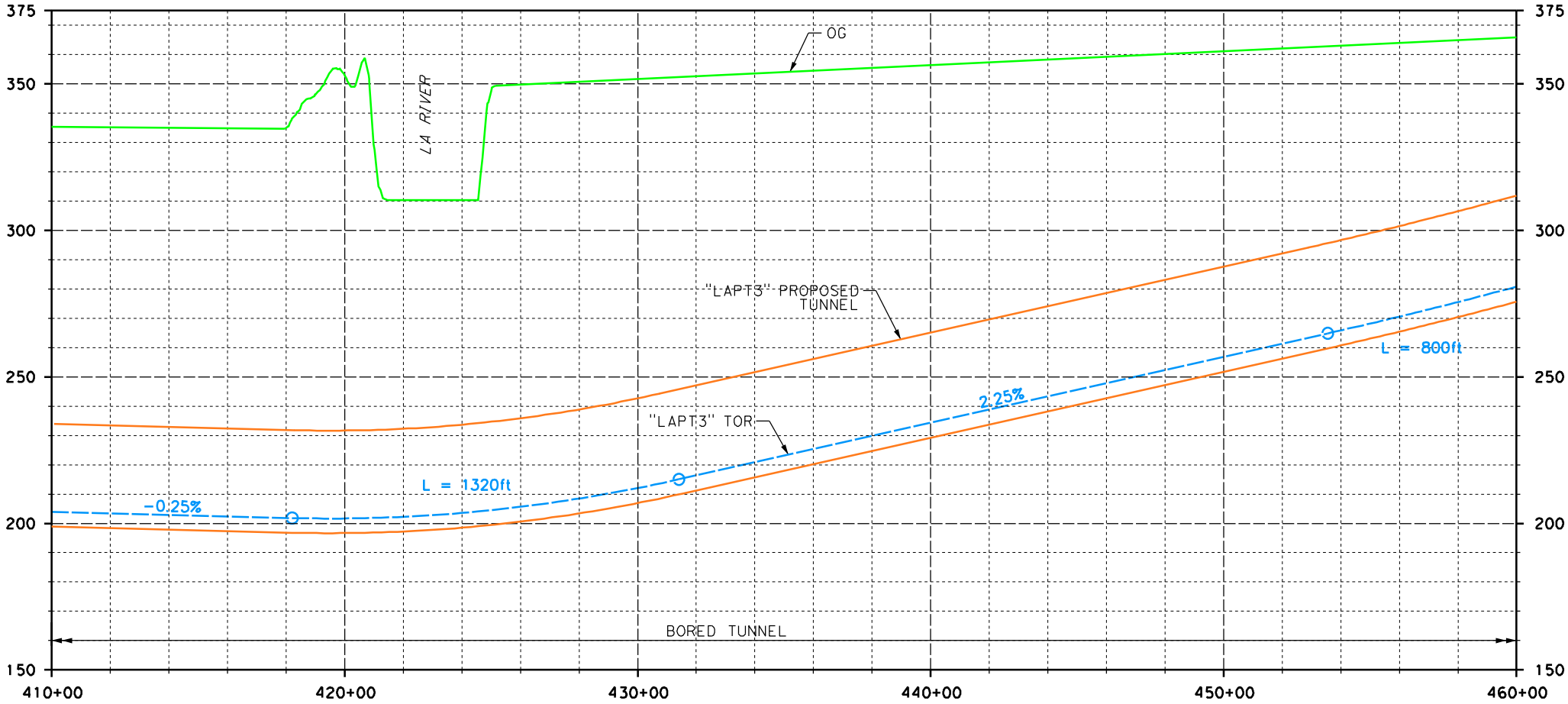
**CALIFORNIA HIGH-SPEED TRAIN PROJECT
PALMDALE TO LOS ANGELES**

ALTERNATIVES ANALYSIS
LAUS TO SR-2 - "LAPT3"
PLAN AND PROFILE
STA 360+00 TO 410+00

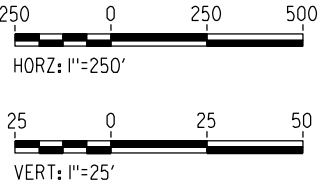
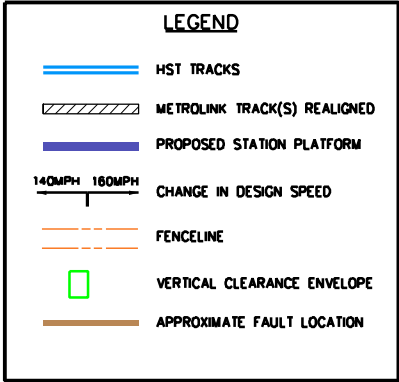
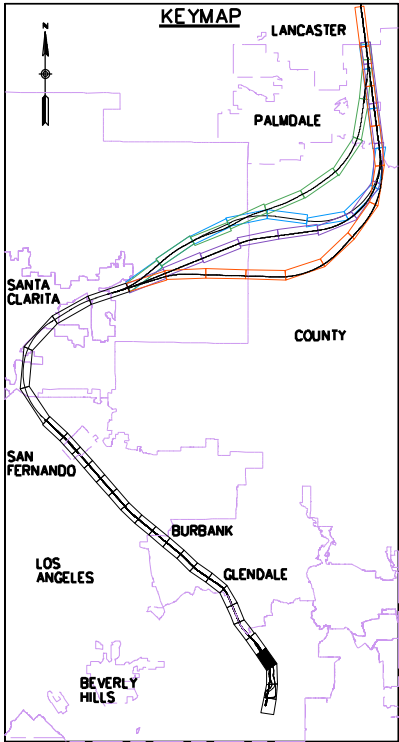
CONTRACT NO.
DRAWING NO. LAP-CB1312
SCALE AS SHOWN
SHEET NO. 3 OF 5



PLAN



PROFILE



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REV	DATE	BY	CHK	APP	DESCRIPTION
A	10/07/10	FC	JE	NC	UPDATED FOR SUPPLEMENTAL ALTERNATIVE ANALYSIS

DESIGNED BY J. LANGHAM
DRAWN BY D. ORIZA
CHECKED BY N. CARSTAIRS
IN CHARGE R. HOLMQUIST
DATE 07/02/2010



Hatch Mott MacDonald, URS, & Arup
A HIGH-SPEED RAIL JOINT VENTURE

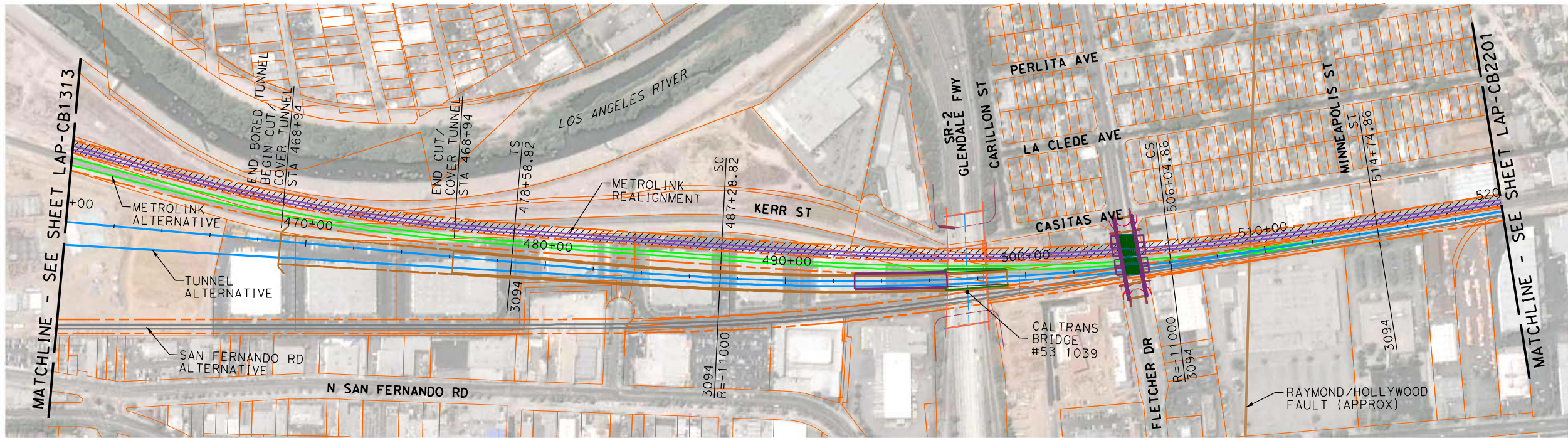


CALIFORNIA
HIGH-SPEED RAIL AUTHORITY

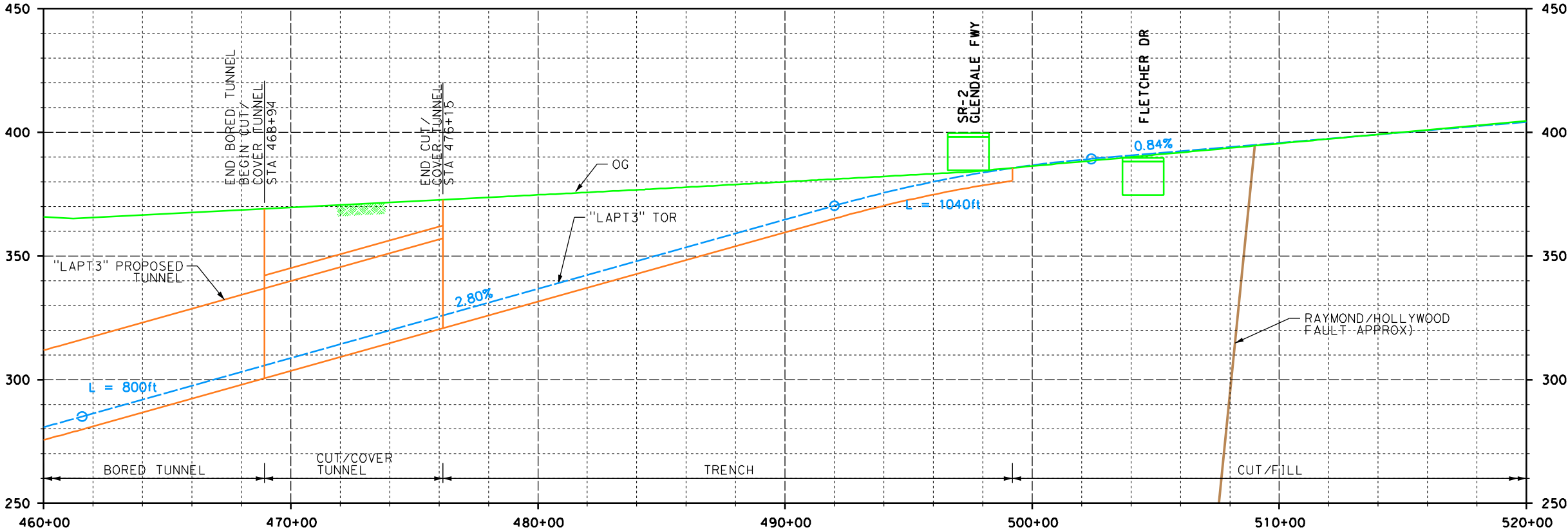
**CALIFORNIA HIGH-SPEED TRAIN PROJECT
PALMDALE TO LOS ANGELES**

ALTERNATIVES ANALYSIS
LAUS TO SR-2 - "LAPT3"
PLAN AND PROFILE
STA 410+00 TO 460+00

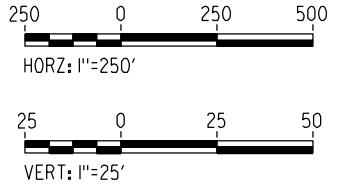
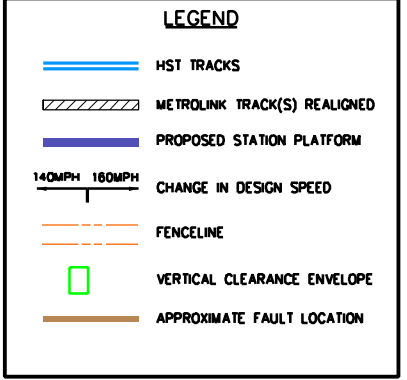
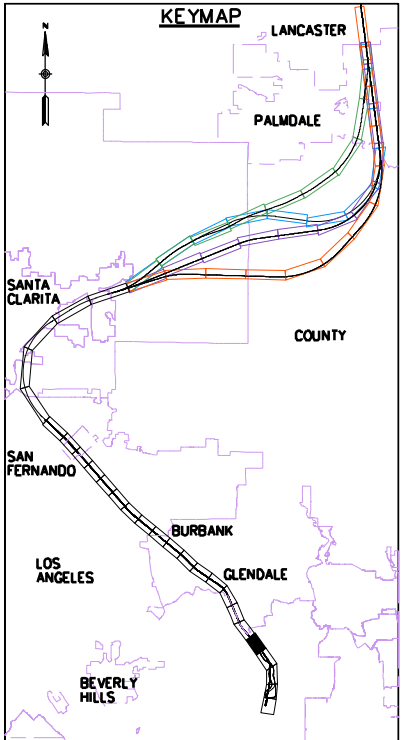
CONTRACT NO.
DRAWING NO. LAP-CB1313
SCALE AS SHOWN
SHEET NO. 4 OF 5



PLAN



PROFILE



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REV	DATE	BY	CHK	APP	DESCRIPTION
A	10/07/10	FC	JE	NC	UPDATED FOR SUPPLEMENTAL ALTERNATIVE ANALYSIS

DESIGNED BY J. LANGHAM
DRAWN BY J. REILLY
CHECKED BY N. CARSTAIRS
IN CHARGE R. HOLMQUIST
DATE 07/02/2010



Hatch Mott MacDonald, URS, & Arup
A HIGH-SPEED RAIL JOINT VENTURE

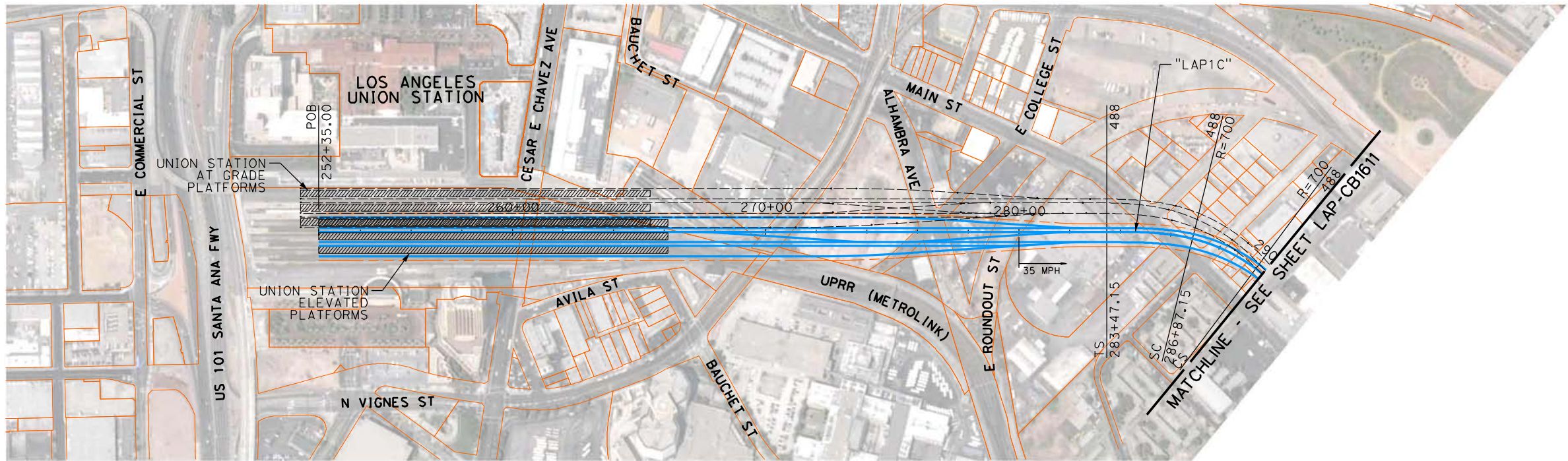


CALIFORNIA
HIGH-SPEED RAIL AUTHORITY

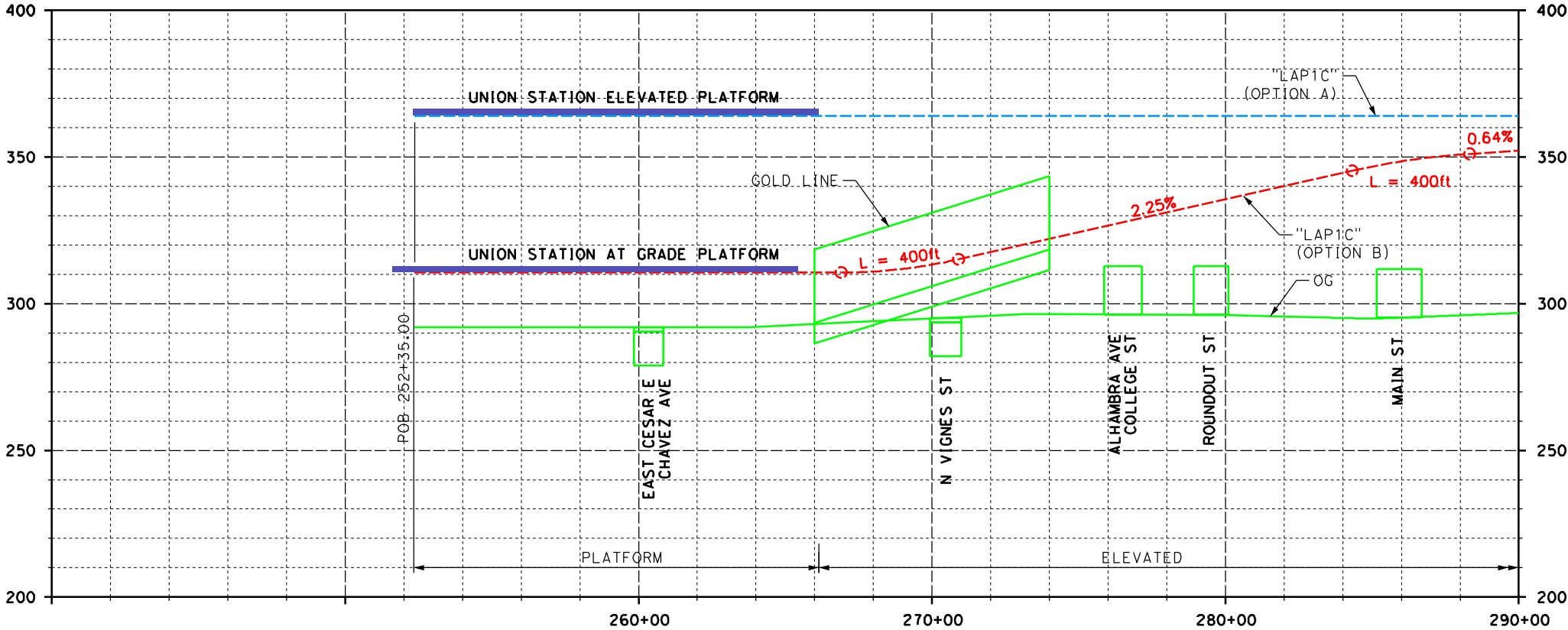
CALIFORNIA HIGH-SPEED TRAIN PROJECT PALMDALE TO LOS ANGELES

ALTERNATIVES ANALYSIS
LAUS TO SR-2 - "LAPT3"
PLAN AND PROFILE
STA 460+00 TO 520+00

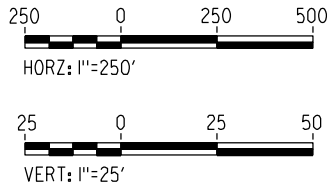
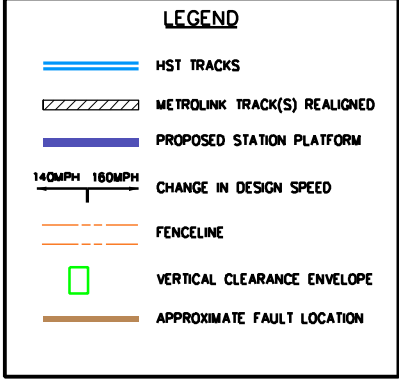
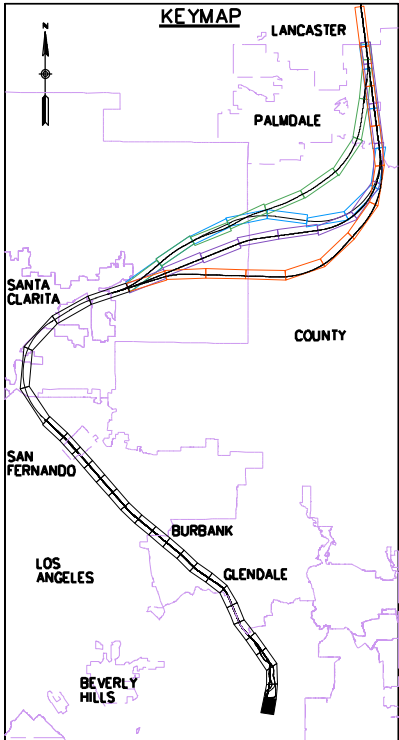
CONTRACT NO.
DRAWING NO. LAP-CB1314
SCALE AS SHOWN
SHEET NO. 5 OF 5



PLAN



PROFILE



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REV	DATE	BY	CHK	APP	DESCRIPTION
A	10/07/10	FC	JE	NC	UPDATED FOR SUPPLEMENTAL ALTERNATIVE ANALYSIS

DESIGNED BY J. LANGHAM
DRAWN BY J. REILLY
CHECKED BY N. CARSTAIRS
IN CHARGE R. HOLMQUIST
DATE 07/02/2010



Hatch Mott MacDonald, URS, & Arup
A HIGH-SPEED RAIL JOINT VENTURE



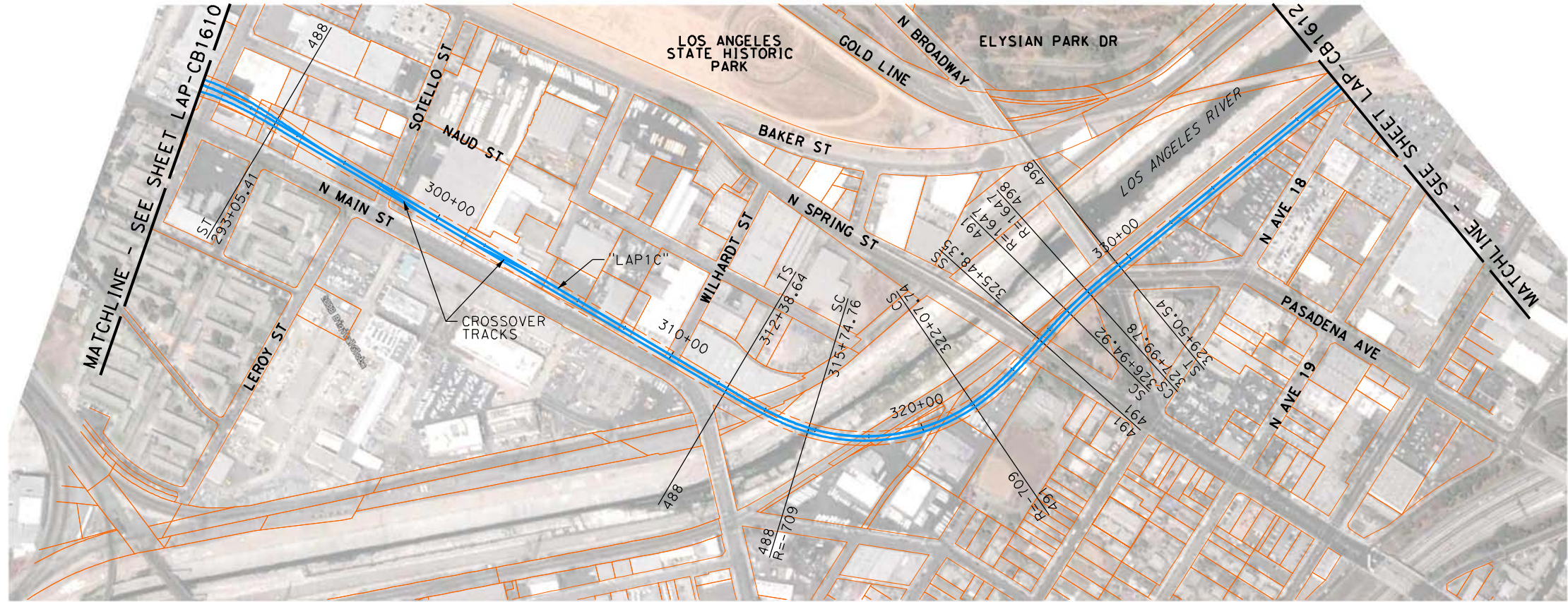
CALIFORNIA
HIGH-SPEED RAIL AUTHORITY

CALIFORNIA HIGH-SPEED TRAIN PROJECT
PALMDALE TO LOS ANGELES

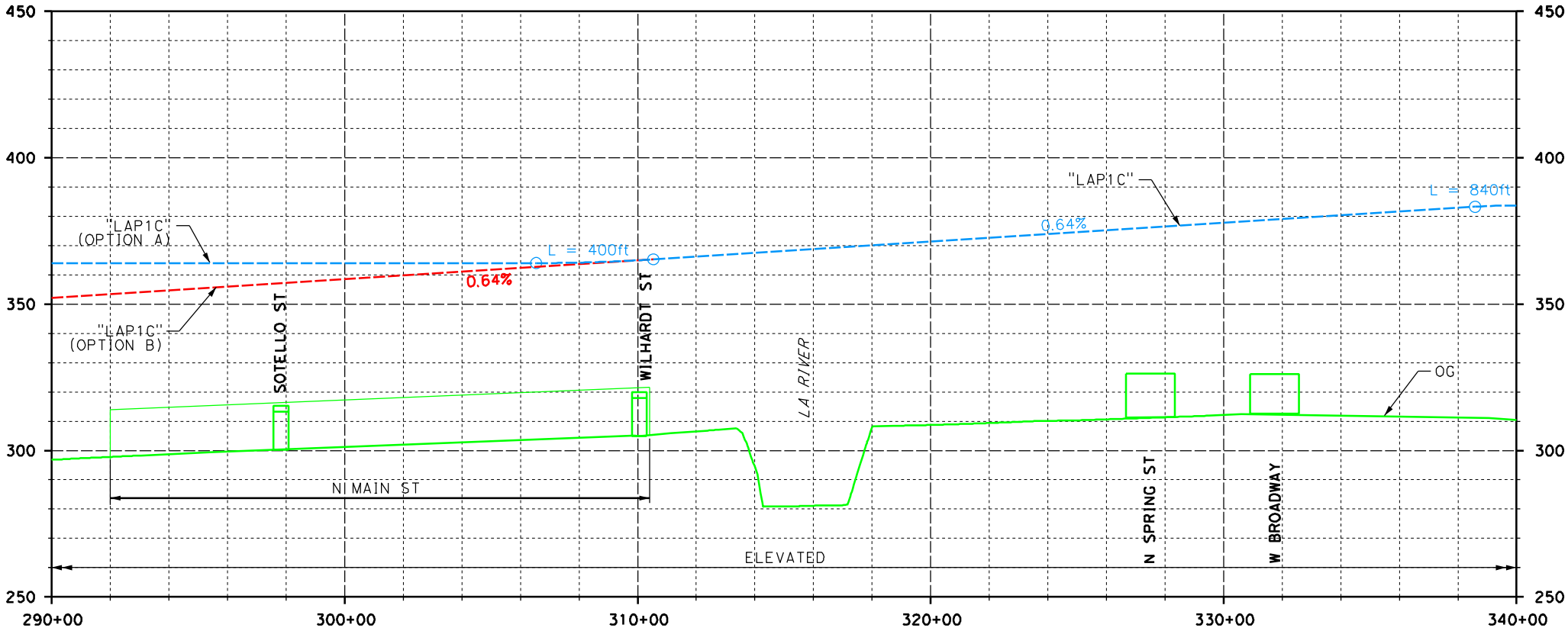
ALTERNATIVES ANALYSIS
LAUS TO SR-2 - "LAP1C"
PLAN AND PROFILE
STA 252+35 TO 290+00

CONTRACT NO.
DRAWING NO. LAP-CB1610
SCALE AS SHOWN
SHEET NO. 1 OF 5

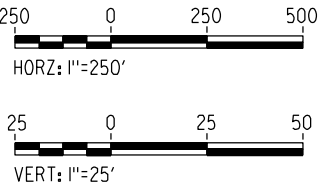
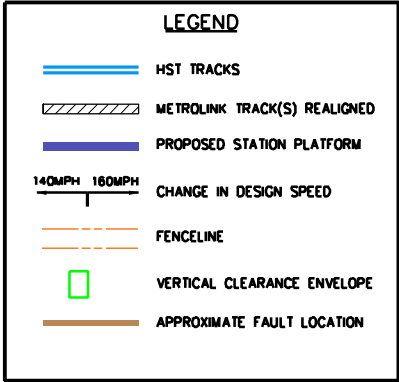
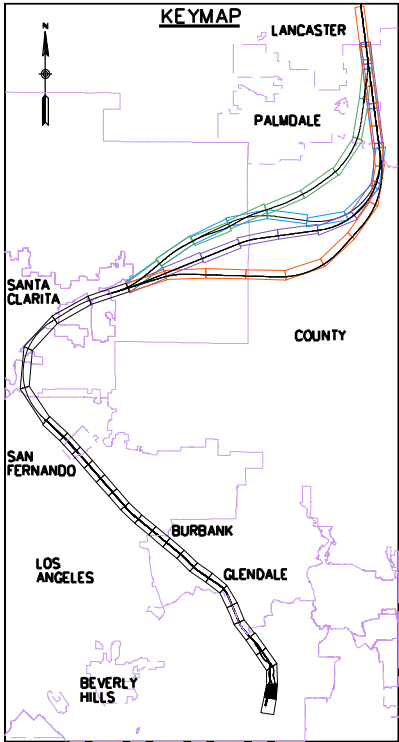
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PLAN



PROFILE



REV	DATE	BY	CHK	APP	DESCRIPTION
A	10/07/10	FC	JE	NC	UPDATED FOR SUPPLEMENTAL ALTERNATIVE ANALYSIS

DESIGNED BY J. LANGHAM
DRAWN BY J. REILLY
CHECKED BY N. CARSTAIRS
IN CHARGE R. HOLMQUIST
DATE 07/02/2010



Hatch Mott MacDonald, URS, & Arup
A HIGH-SPEED RAIL JOINT VENTURE

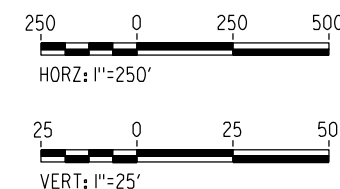
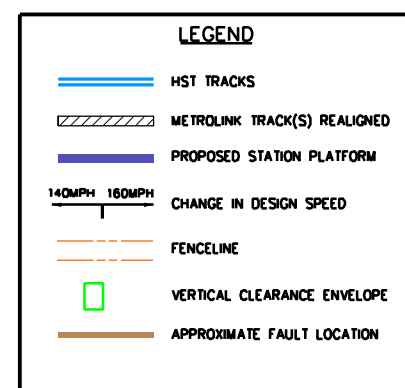
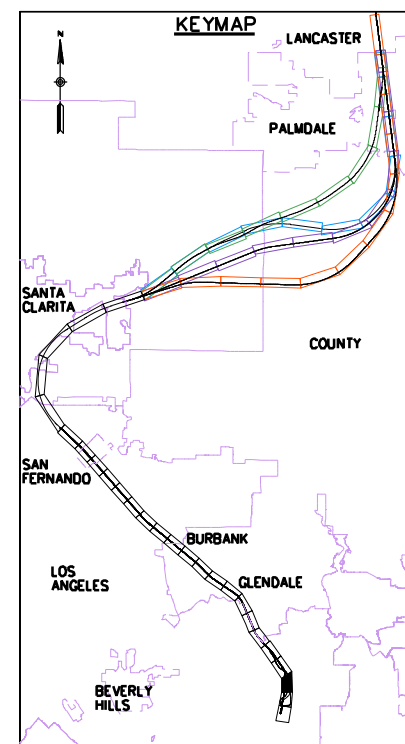
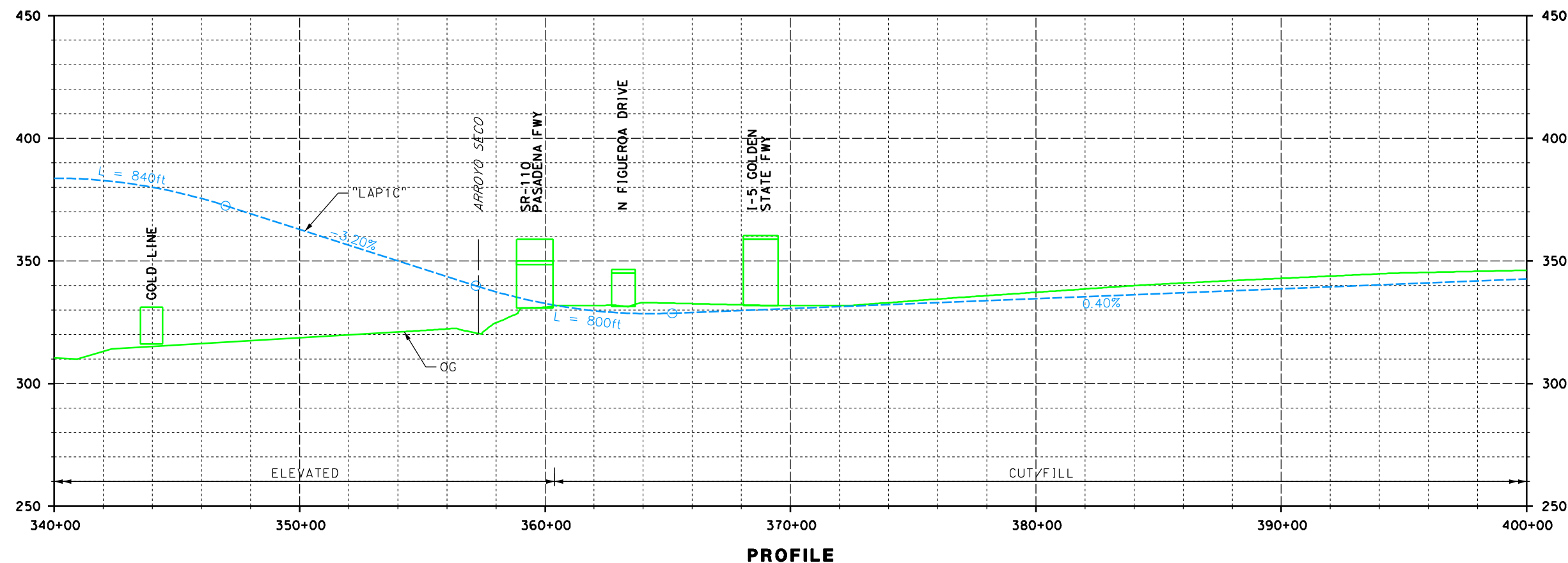
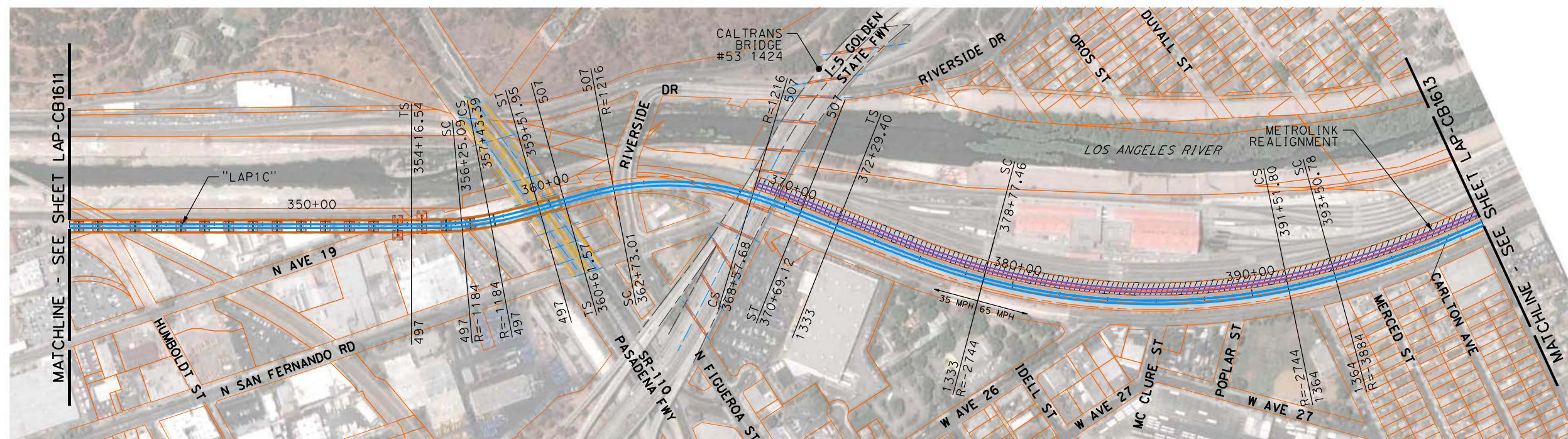


CALIFORNIA
HIGH-SPEED RAIL AUTHORITY

**CALIFORNIA HIGH-SPEED TRAIN PROJECT
PALMDALE TO LOS ANGELES**

ALTERNATIVES ANALYSIS
LAUS TO SR-2 - "LAP1C"
PLAN AND PROFILE
STA 290+00 TO 340+00

CONTRACT NO.
DRAWING NO. LAP-CB1611
SCALE AS SHOWN
SHEET NO. 2 OF 5



Erik.Tanaka 2/8/2011 2:21:04 PM c:\pwworking\hmm\erik.tanaka@arup.com\dms03875\LAP-CB1612-A.dgn

A	10/07/10	FC	JE	NC	UPDATED FOR SUPPLEMENTAL ALTERNATIVE ANALYSIS
REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY	J. LANGHAM
DRAWN BY	J. REILLY
CHECKED BY	N. CARSTAIRS
IN CHARGE	R. HOLMQUIST
DATE	07/02/2010



Hatch Mott MacDonald, URS, & Arup
A HIGH-SPEED RAIL JOINT VENTURE



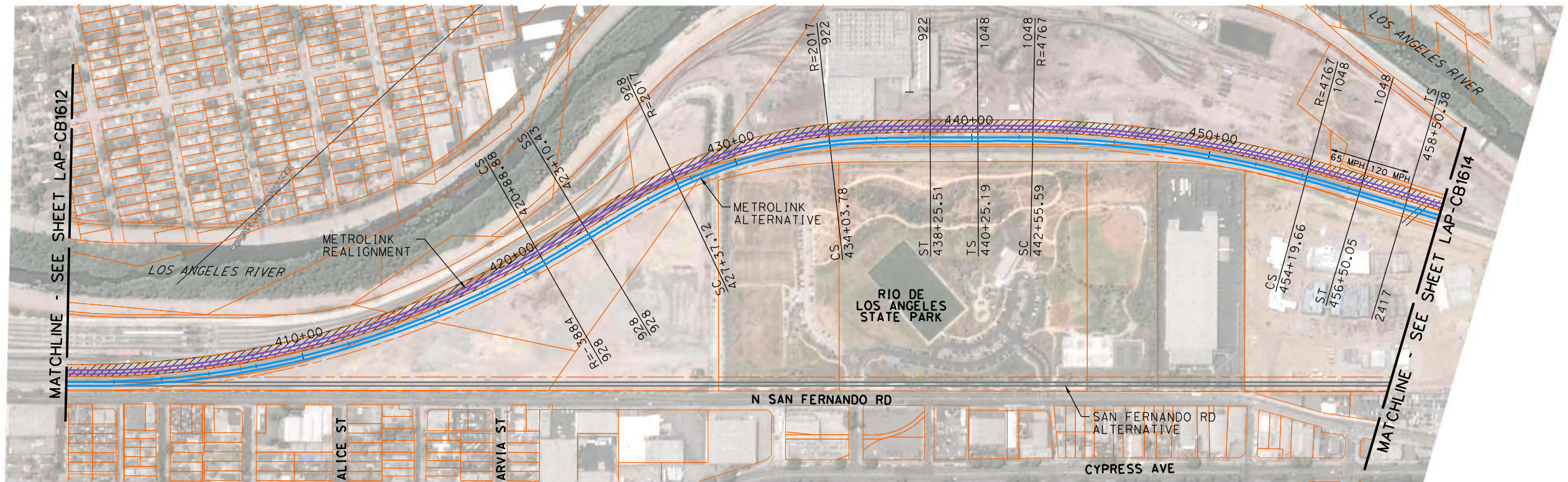
CALIFORNIA
HIGH-SPEED RAIL AUTHORITY

**CALIFORNIA HIGH-SPEED TRAIN PROJECT
PALMDALE TO LOS ANGELES**

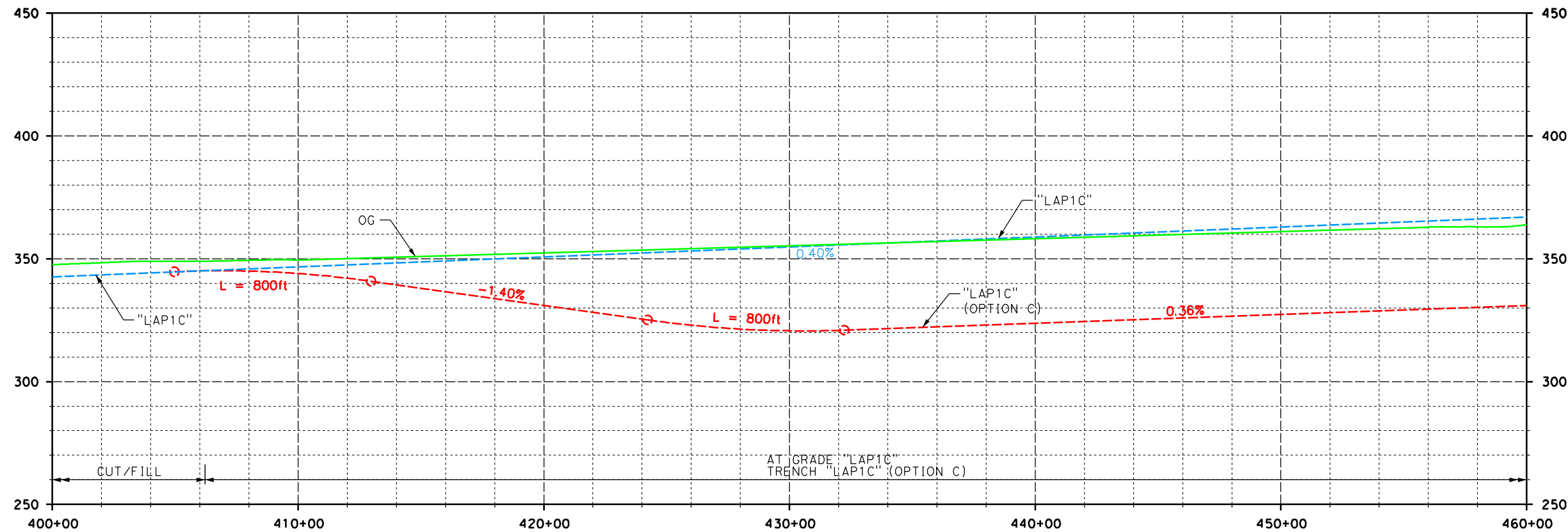
ALTERNATIVES ANALYSIS
LAUS TO SR-2 - "LAP1C"
PLAN AND PROFILE
STA 340+00 TO 400+00

CONTRACT NO.
DRAWING NO. LAP-CB1612
SCALE AS SHOWN
SHEET NO. 3 OF 5

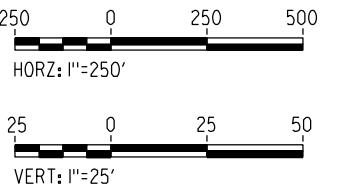
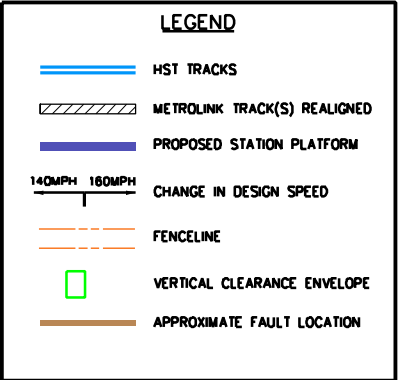
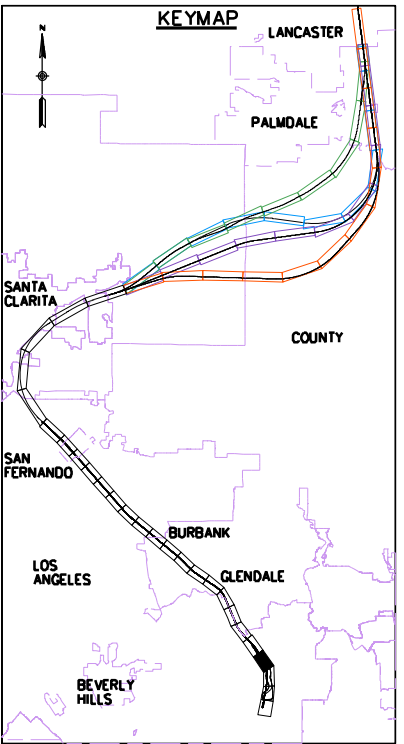
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PLAN



PROFILE



REV	DATE	BY	CHK	APP	DESCRIPTION
A	10/07/10	FC	JE	NC	UPDATED FOR SUPPLEMENTAL ALTERNATIVE ANALYSIS

DESIGNED BY J. LANGHAM
DRAWN BY B. BODIN
CHECKED BY N. CARSTAIRS
IN CHARGE R. HOLMQUIST
DATE 07/02/2010



Hatch Mott MacDonald, URS, & Arup
A HIGH-SPEED RAIL JOINT VENTURE

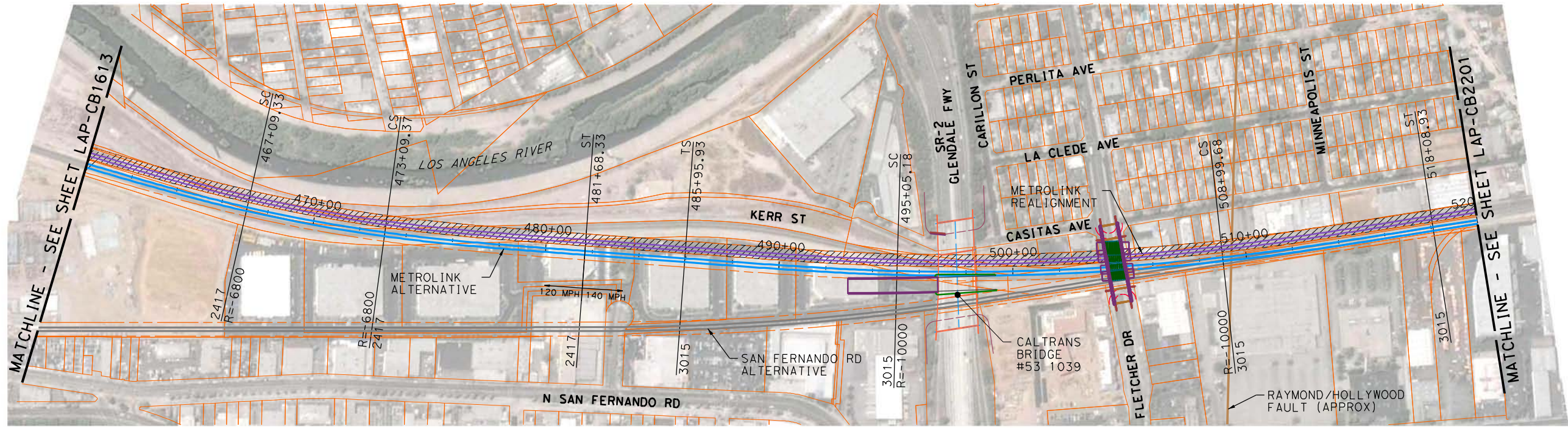


CALIFORNIA
HIGH-SPEED RAIL AUTHORITY

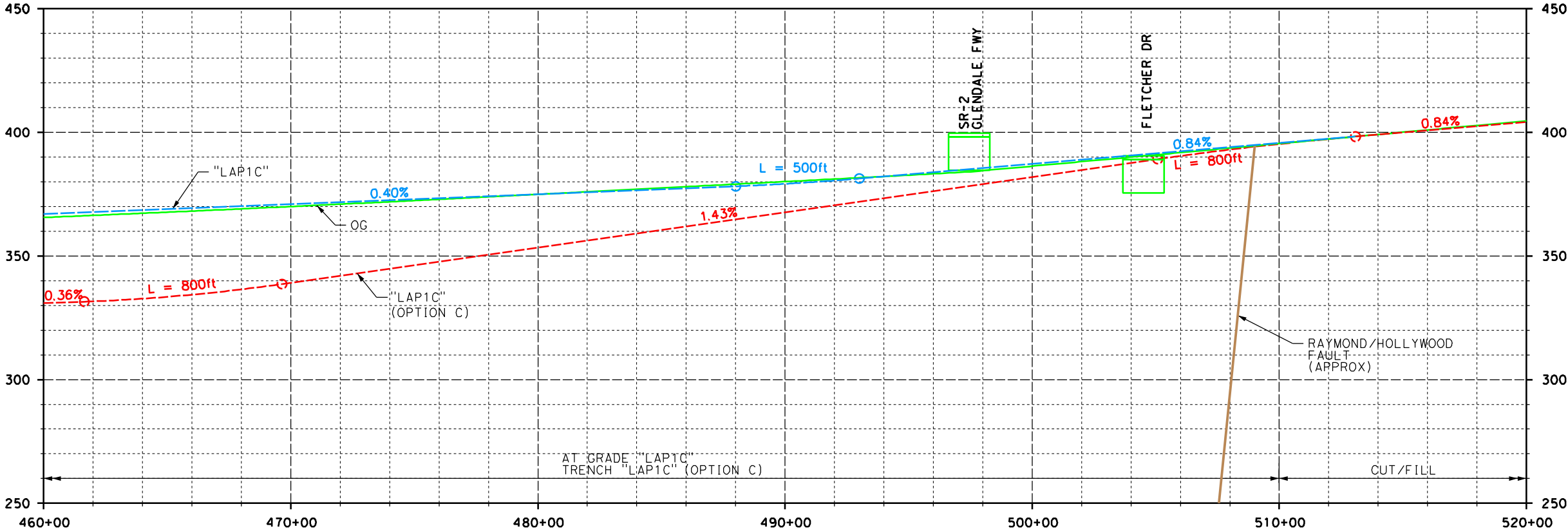
**CALIFORNIA HIGH-SPEED TRAIN PROJECT
PALMDALE TO LOS ANGELES**

ALTERNATIVES ANALYSIS
LAUS TO SR-2 - "LAP1C"
PLAN AND PROFILE
STA 400+00 TO 460+00

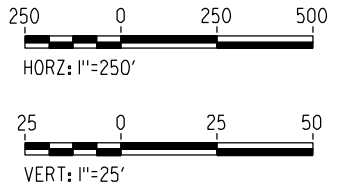
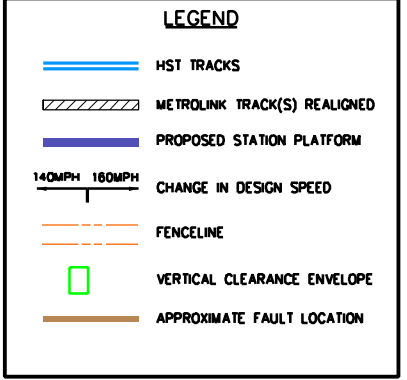
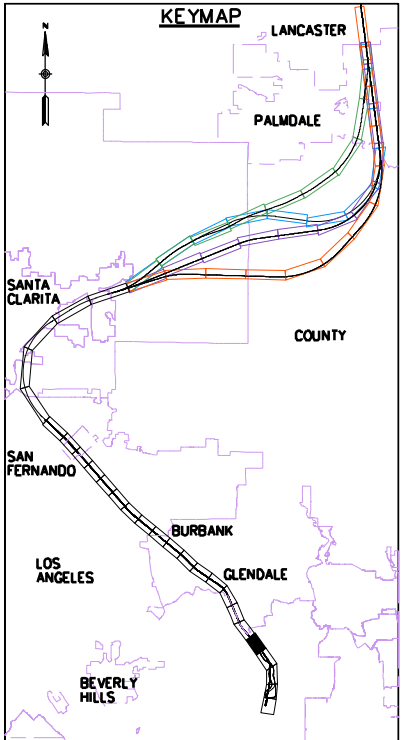
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DRAWING NO. LAP-CB1613
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SHEET NO. 4 OF 5



PLAN



PROFILE



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REV	DATE	BY	CHK	APP	DESCRIPTION
A	10/07/10	FC	JE	NC	UPDATED FOR SUPPLEMENTAL ALTERNATIVE ANALYSIS

DESIGNED BY J. LANGHAM
DRAWN BY J. REILLY
CHECKED BY N. CARSTAIRS
IN CHARGE R. HOLMQUIST
DATE 07/02/2010



Hatch Mott MacDonald, URS, & Arup
A HIGH-SPEED RAIL JOINT VENTURE

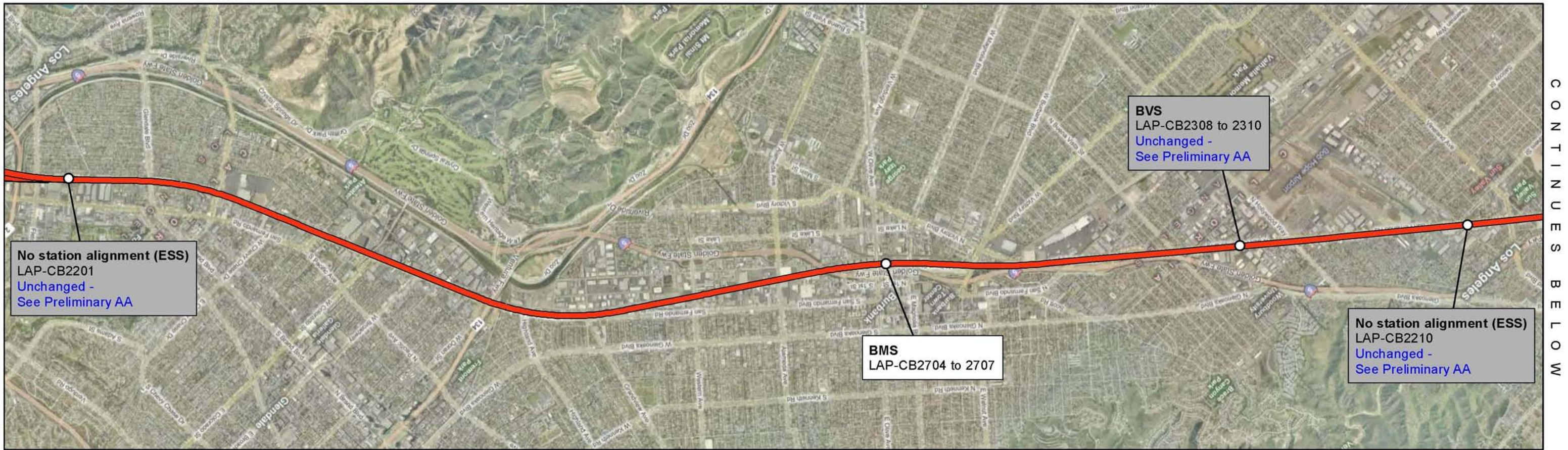


CALIFORNIA
HIGH-SPEED RAIL AUTHORITY

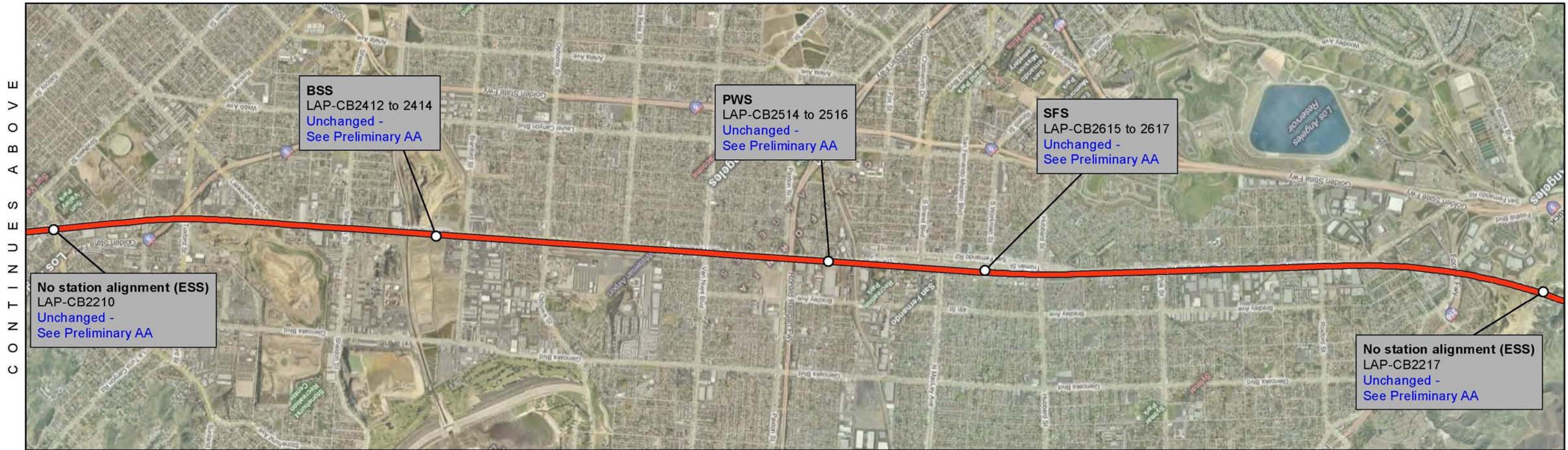
**CALIFORNIA HIGH-SPEED TRAIN PROJECT
PALMDALE TO LOS ANGELES**

ALTERNATIVES ANALYSIS
LAUS TO SR-2 - "LAP1C"
PLAN AND PROFILE
STA 460+00 TO 520+00

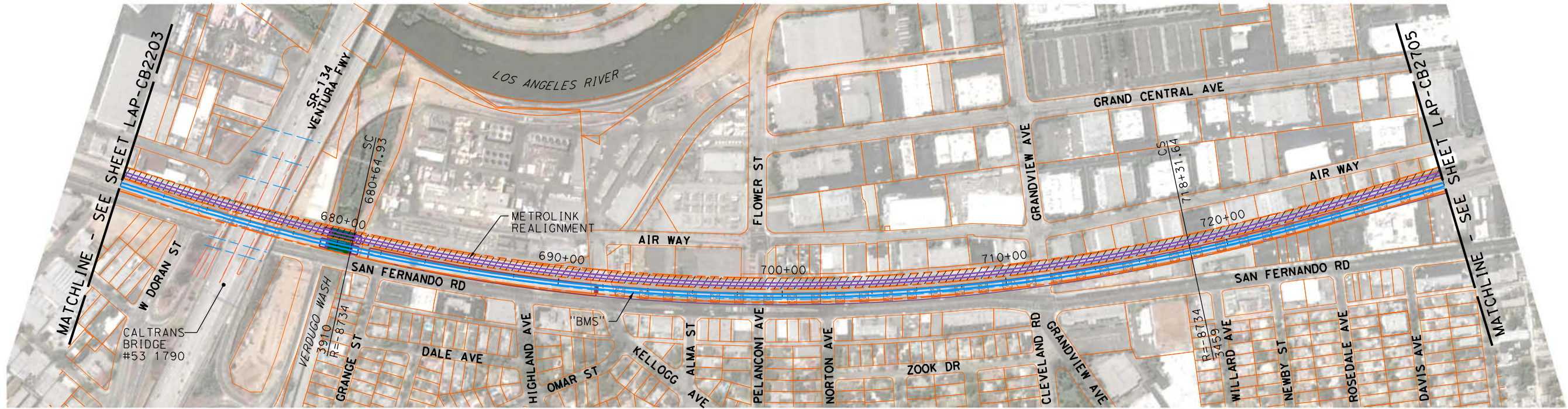
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SHEET NO. 5 OF 5



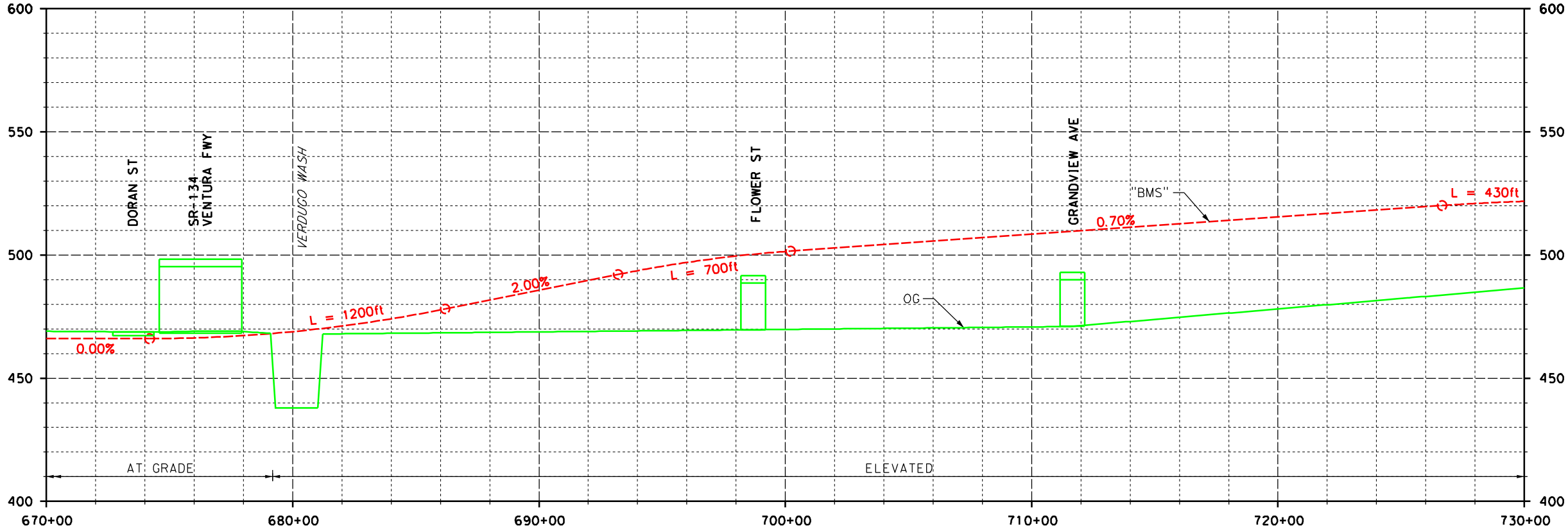
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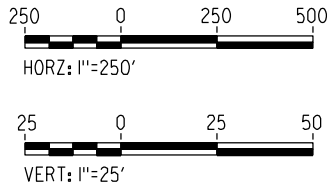
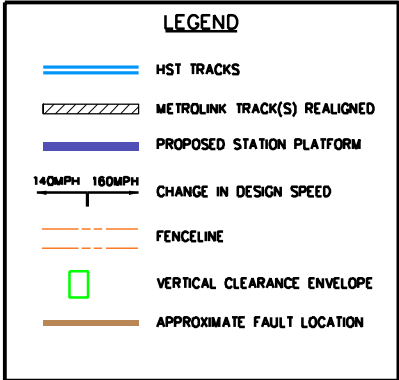
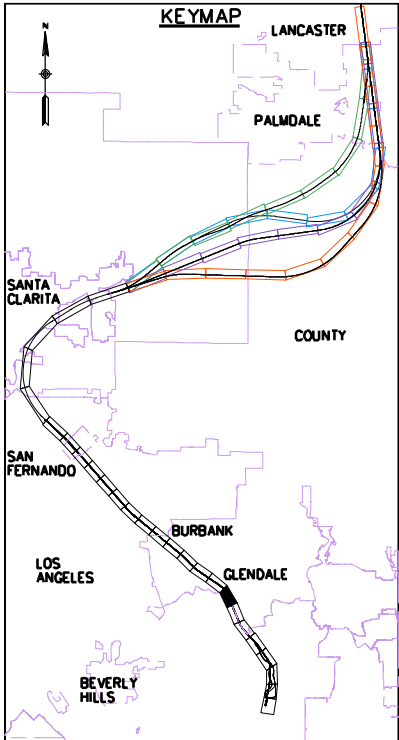
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PLAN



PROFILE



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REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY
G. MEJIA
DRAWN BY
J. REILLY
CHECKED BY
N. CARSTAIRS
IN CHARGE
R. HOLMQUIST
DATE
10/10/2010



Hatch Mott MacDonald, URS, & Arup
A HIGH-SPEED RAIL JOINT VENTURE

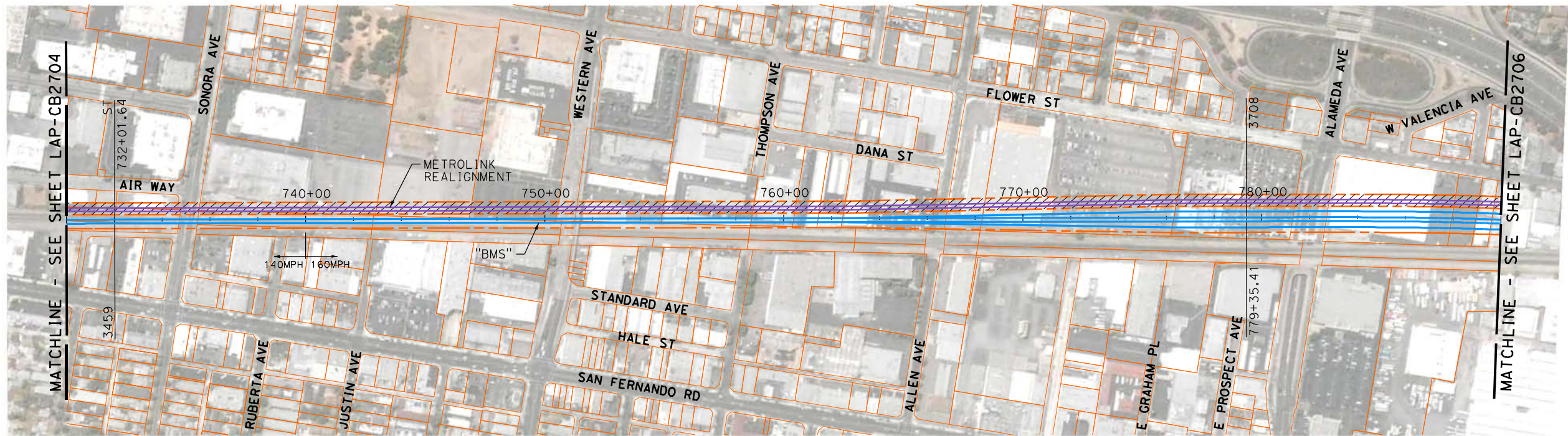


CALIFORNIA
HIGH-SPEED RAIL AUTHORITY

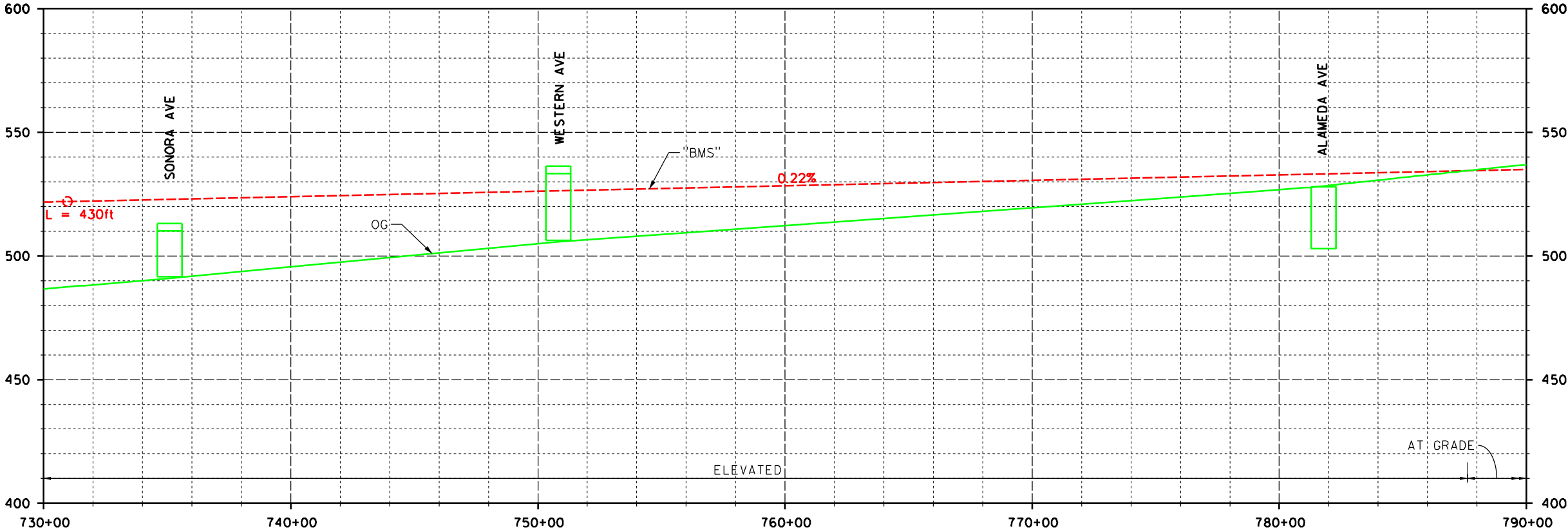
**CALIFORNIA HIGH-SPEED TRAIN PROJECT
PALMDALE TO LOS ANGELES**

ALTERNATIVES ANALYSIS
SR-2 TO SYLMAR - "BMS"
PLAN AND PROFILE
STA 670+00 TO 730+00

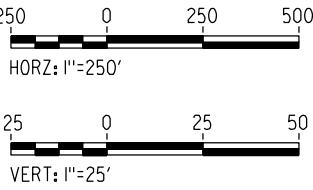
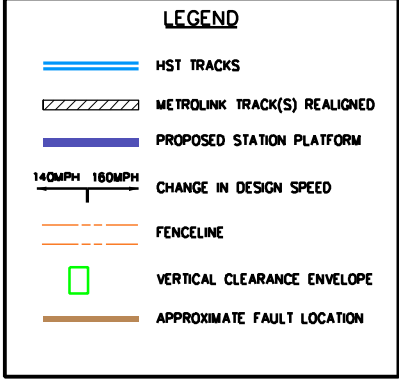
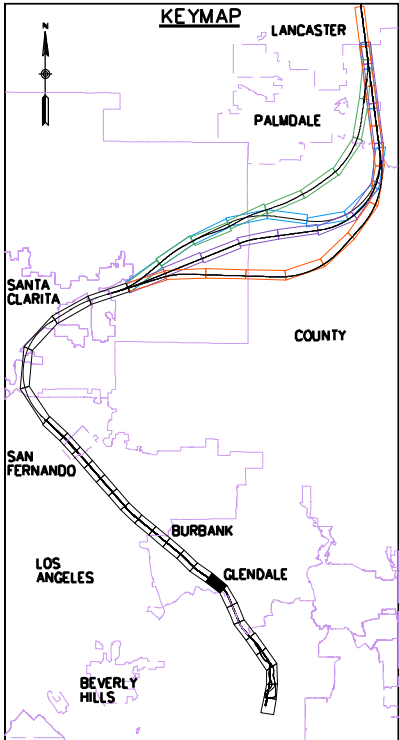
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DRAWING NO. LAP-CB2704
SCALE AS SHOWN
SHEET NO. 1 OF 4



PLAN



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REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MEJIA
DRAWN BY J. REILLY
CHECKED BY N. CARSTAIRS
IN CHARGE R. HOLMQUIST
DATE 10/10/2010



Hatch Mott MacDonald, URS, & Arup
A HIGH-SPEED RAIL JOINT VENTURE



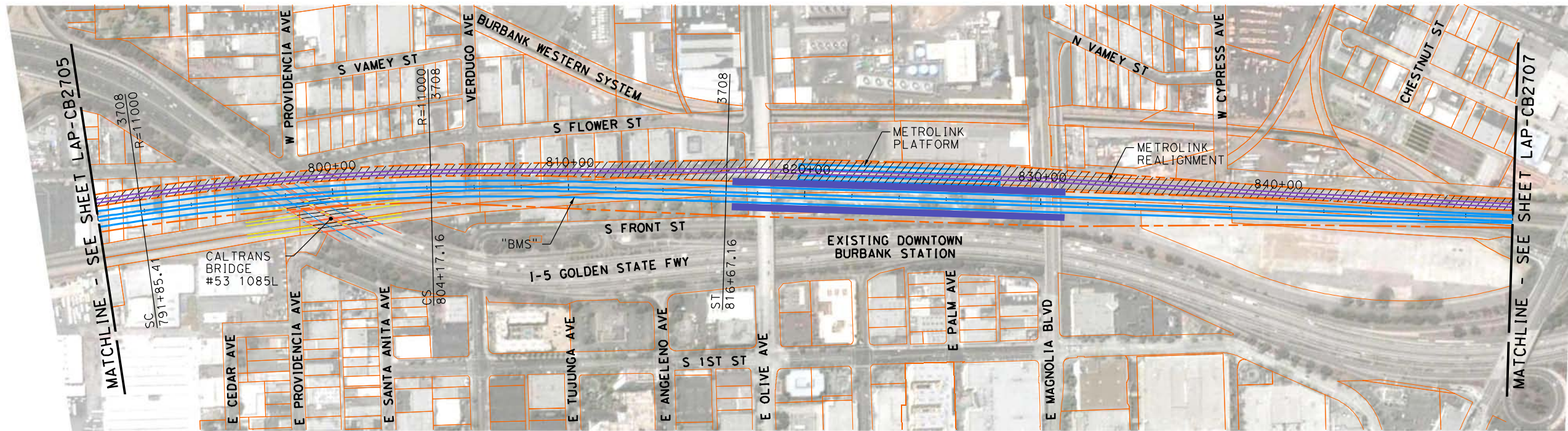
CALIFORNIA
HIGH-SPEED RAIL AUTHORITY

**CALIFORNIA HIGH-SPEED TRAIN PROJECT
PALMDALE TO LOS ANGELES**

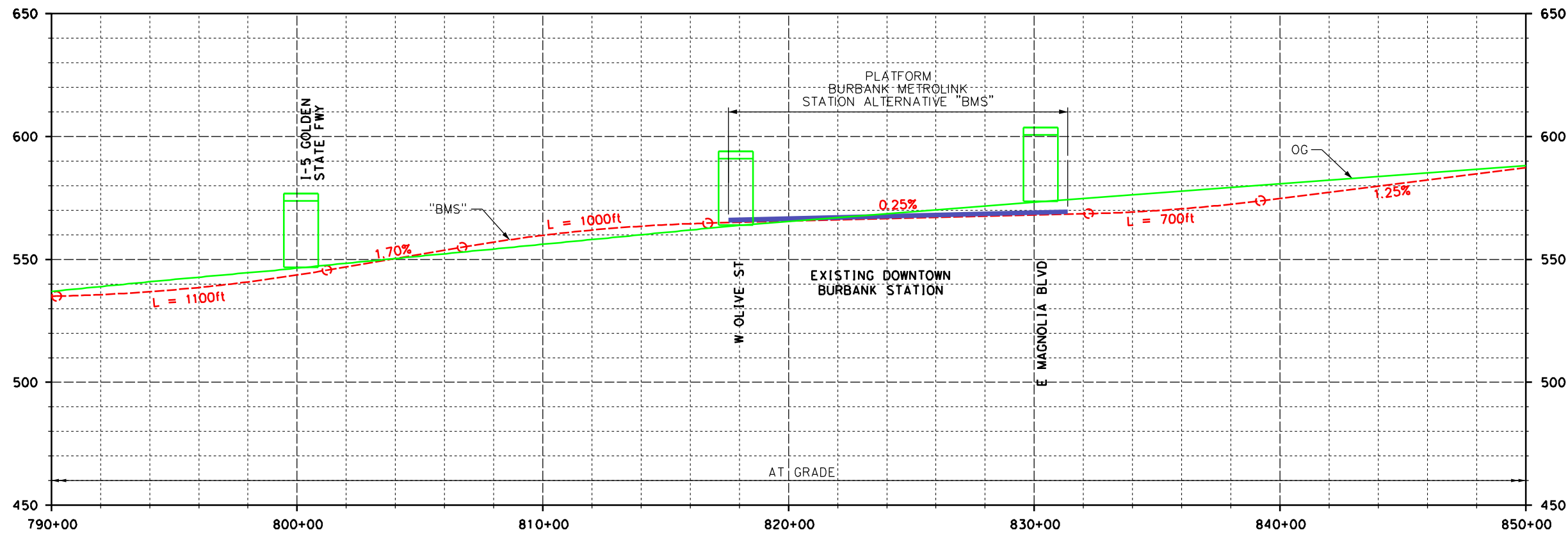
ALTERNATIVES ANALYSIS
SR-2 TO SYLMAR - "BMS"
PLAN AND PROFILE
STA 730+00 TO 790+00

CONTRACT NO.
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SHEET NO. 2 OF 4

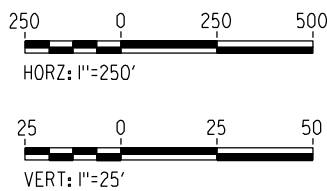
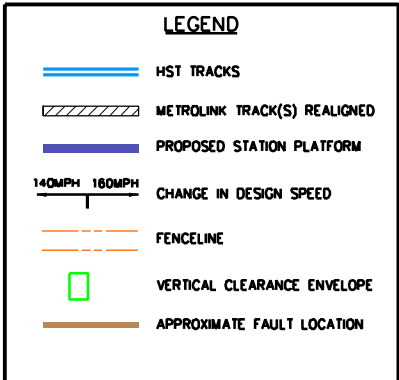
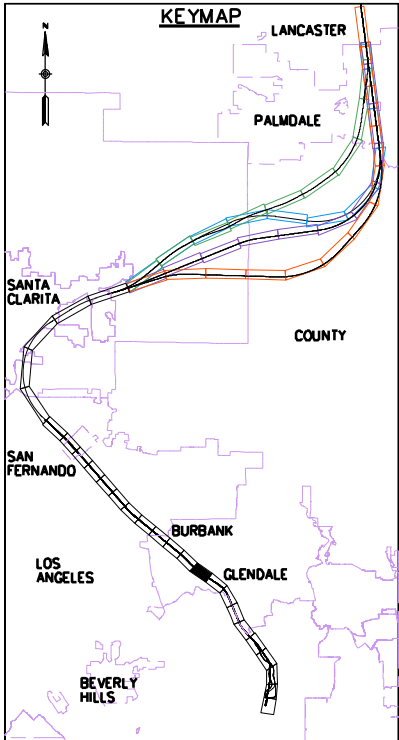
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PLAN



PROFILE



REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MEJIA
DRAWN BY J. REILLY
CHECKED BY N. CARSTAIRS
IN CHARGE R. HOLMQUIST
DATE 10/10/2010



Hatch Mott MacDonald, URS, & Arup
A HIGH-SPEED RAIL JOINT VENTURE

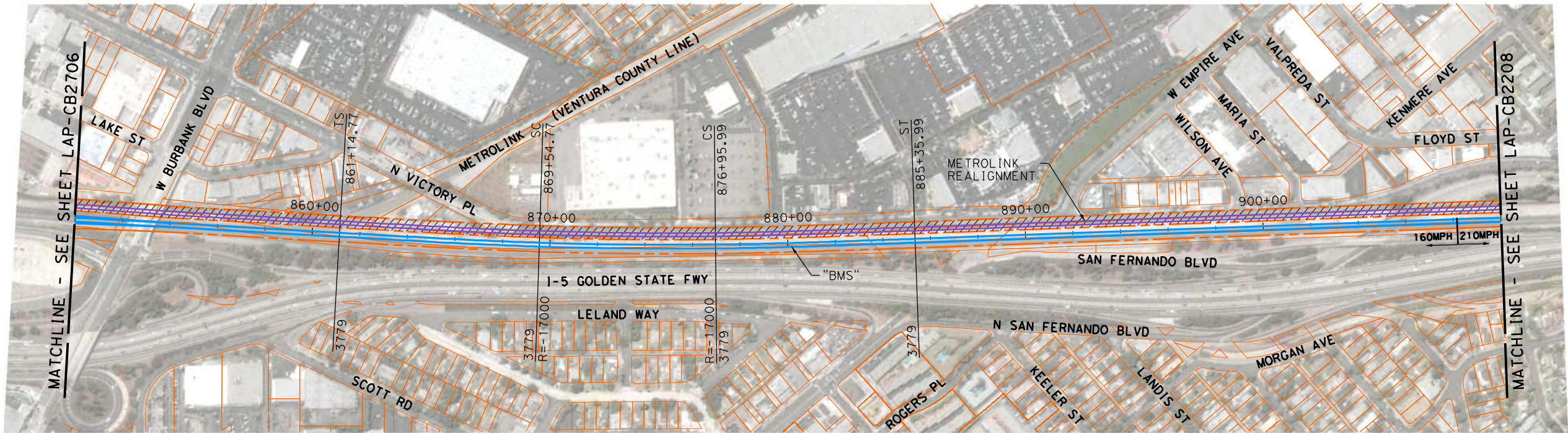


CALIFORNIA
HIGH-SPEED RAIL AUTHORITY

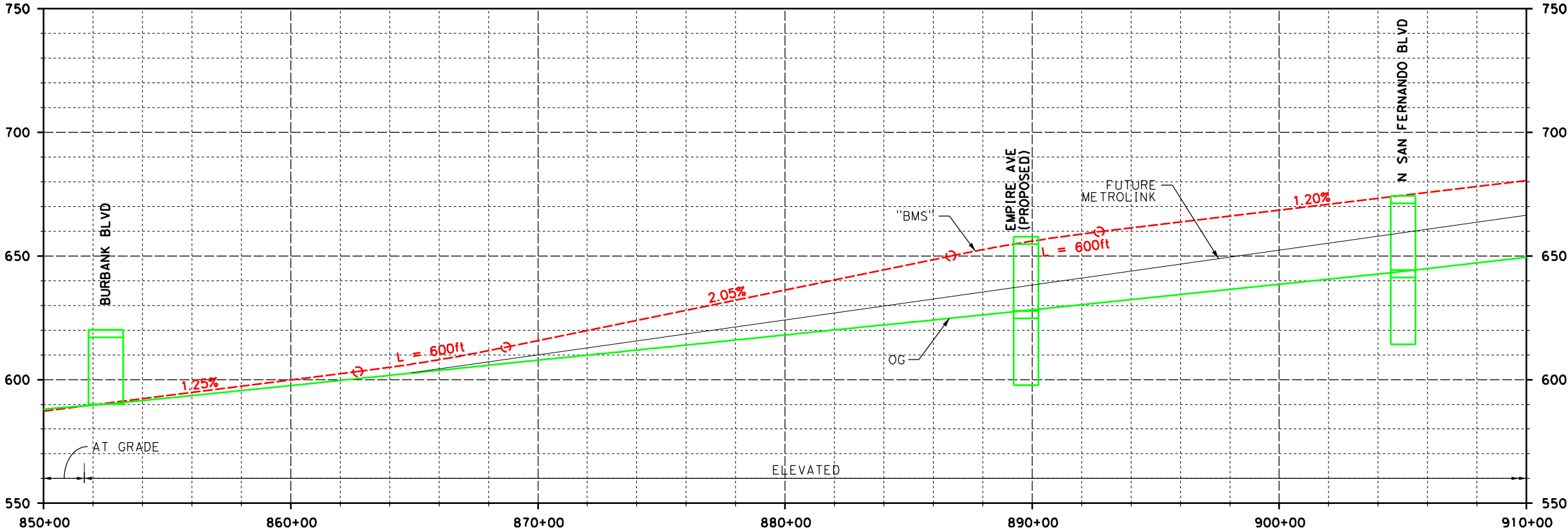
**CALIFORNIA HIGH-SPEED TRAIN PROJECT
PALMDALE TO LOS ANGELES**

ALTERNATIVES ANALYSIS
SR-2 TO SYLMAR - "BMS"
PLAN AND PROFILE
STA 790+00 TO 850+00

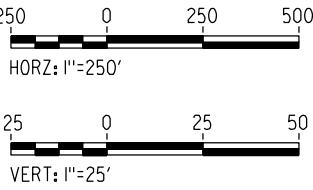
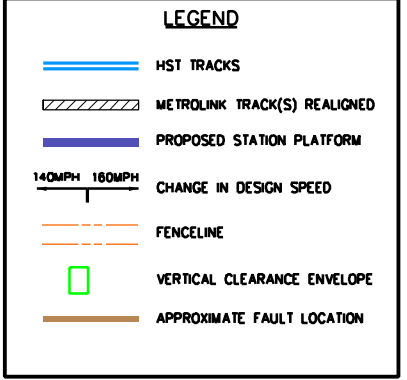
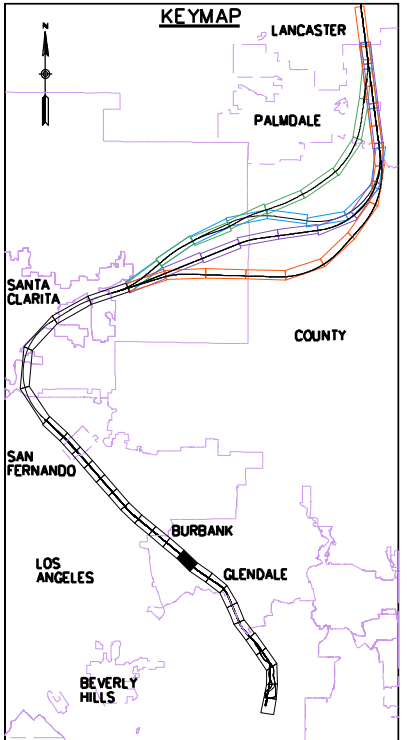
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PLAN



PROFILE



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REV	DATE	BY	CHK	APP	DESCRIPTION

DESIGNED BY G. MEJIA
DRAWN BY J. REILLY
CHECKED BY N. CARSTAIRS
IN CHARGE R. HOLMQUIST
DATE 10/10/2010



Hatch Mott MacDonald, URS, & Arup
A HIGH-SPEED RAIL JOINT VENTURE



CALIFORNIA
HIGH-SPEED RAIL AUTHORITY

**CALIFORNIA HIGH-SPEED TRAIN PROJECT
PALMDALE TO LOS ANGELES**

ALTERNATIVES ANALYSIS
SR-2 TO SYLMAR - "BMS"
PLAN AND PROFILE
STA 850+00 TO 910+00

CONTRACT NO.
DRAWING NO. LAP-CB2707
SCALE AS SHOWN
SHEET NO. 4 OF 4